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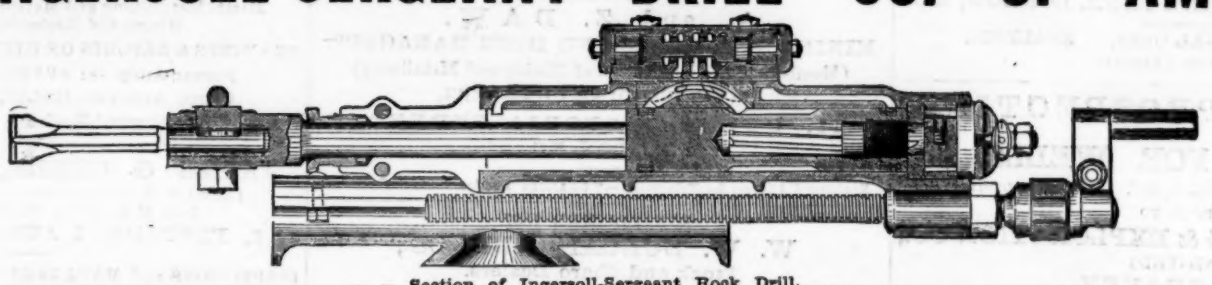

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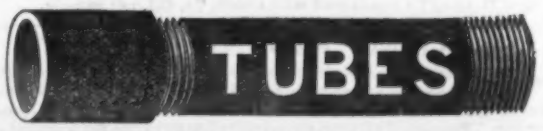

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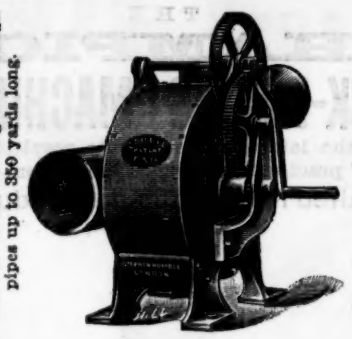

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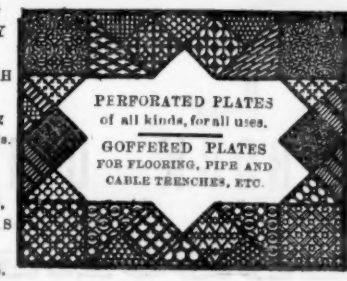

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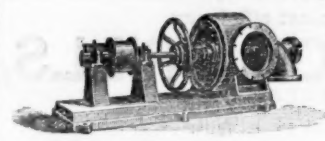

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TURBINES constructed for the GALWAY STATION, which is the LARGEST ELECTRIC LIGHT WATER POWER INSTALLATION in the United Kingdom.

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ARE ALWAYS SENT ON APPROVAL.
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THE "RAPID"
Sampling and Dividing Machines
SAVE AT LEAST 80 PER CENT. OF TIME.

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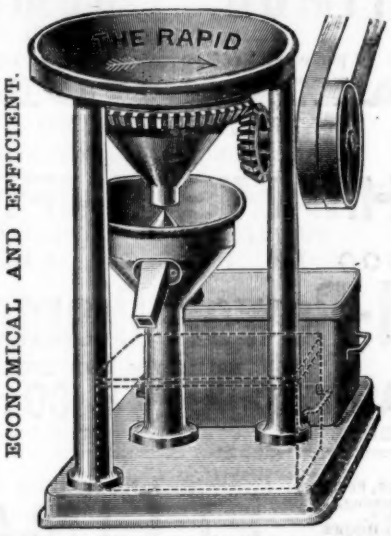

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The ACCURACY of the Machines has been PROVED

MAY BE TURNED BY HAND.

For Ores, Chemicals, Grain, Liquids, &c.

The EFFICIENCY AND DURABILITY of each Machine is fully GUARANTEED.

MACHINES MAY BE TESTED AT 59, MARK LANE, E.C.

T. CLARKSON, Engineer.

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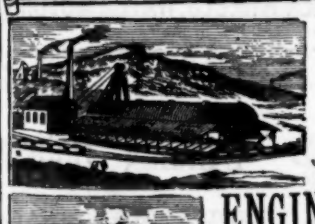
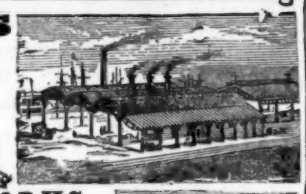


IRON ROOFS
AND
BUILDINGS
FOR



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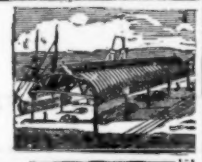
Mining Machinery Buildings, Workmen's Cottages & Manager's Houses.

Special Attention given to Export Work. Constructional Ironwork of all Kind
Drawings and all Information on Application.



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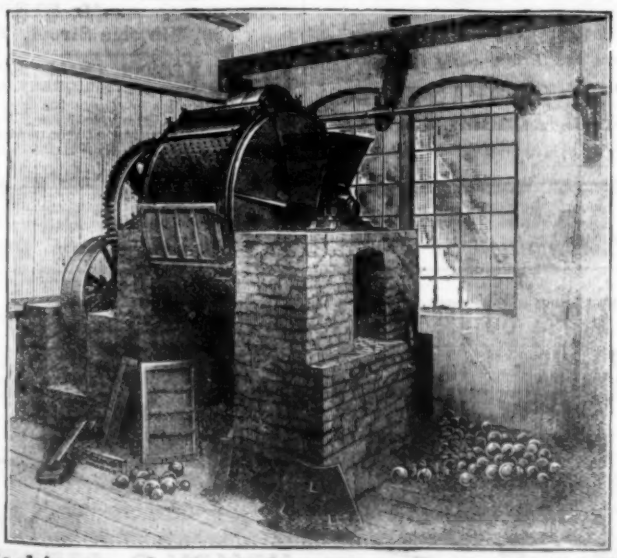
SILVER EXTRACTION MACHINERY.
Francke's system. (15 to 20 per cent. better results than by old methods).



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DRY SEPARATOR
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WIRE ROPES
Of Special Make and Superior Quality,

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Hoisting and Sinking Ropes constructed not to rotate while lifting the load; are much safer than chain, and will wind on a barrel in diameter only six times the circumference of the rope.

We also are Makers, under licence, of
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as per Illustration. This construction differs from all others in the wires being laid into strands, and the strands into rope in the same direction of spiral, thereby giving a longer face of Wire to friction, and increased flexibility without diminishing the twist or binding properties required to keep good the cylindrical form of the Rope when under pressure or tension. The life of the Rope is thereby much prolonged, as the Wires do not break until they have become too weak for their work.

IRON, STEEL AND COPPER CORDS.
PATENT LIGHTNING CONDUCTORS.
Manilla, Italian & Russian Hemp Rope
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N.B.—This Company is carrying on the business of the late firm of R. S. NEWALL & CO., in all its branches, but has no connection with any other firm trading under the name of NEWALL

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THE SOUTH AFRICAN MINING JOURNAL AND FINANCIAL NEWS: A Journal for Investors, Mining Engineers, and Managers. Edited by E. P. RATHBONE, A.M.I.C.E., M.I.M.E., &c. Special Articles upon Witwatersrand Mines. Full Reports, Accurate information. Indispensable to all interested in South African Mines. Published Weekly at Johannesburg. On Sale, price Sixpence, at the London Office, 151, Cannon Street, E.C. Subscription 25s. per annum.

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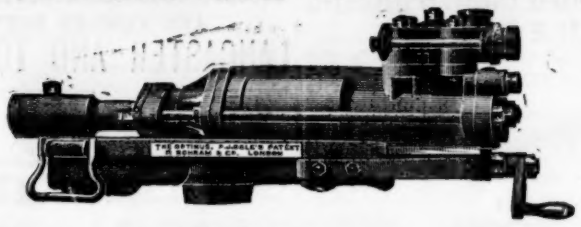

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Consumes 40 per cent. less Compressed Air than any other Drill at the same time giving the most effectual results.

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NO STABLE IS COMPLETE WITHOUT

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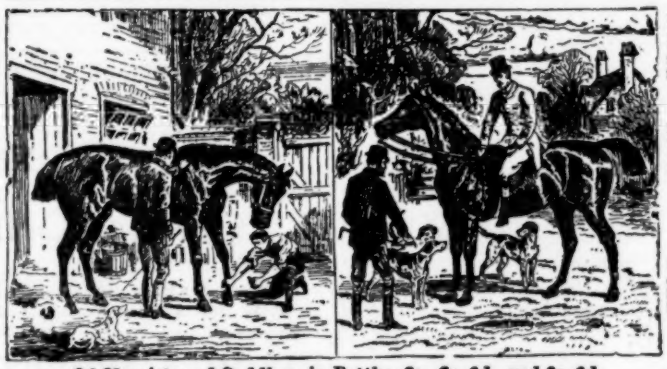

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HADDINGTON, Master of Berwickshire Hounds.

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"If used frequently no blistering required."
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"I find it a very efficacious remedy."
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"It is with great pleasure I certify to the quality of your Embrocation. I have used it with success when other remedies failed, and I am never without it."
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"Your Embrocation has done good service since used for our underground horses."
Yours truly,
The Trafalgar Colliery Co. (Ltd.), FRANK BRAIN, Manager.

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"I beg to inform you that the Royal Embrocation has been very efficacious by using it for the horses of my regiment, and I beg you to send again 25 bottles.
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"I find it invaluable for strains both in horse and hound."
FRED. FITZROY (Captain) Master of Taunton Vale Hounds.

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Winding Indicators

WITH

INDICATING SIGNAL BELL

COMBINED,

As shown in Illustration,

Or either of the two separately as required.

Made to suit any Winding Engine or for hauling purposes; with Bell, to denote when to cut off steam; which can be altered in a few minutes to ring at any part required.

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HERBERTON (WILD RIVER) TIN LODES NORTH QUEENSLAND.

Every information relative to the progress of lode-tin mining in the Wild River district (termed by geologists "The Cornwall of Australia") can be obtained by communicating with the undersigned. CHARLES JENKIN.
"Herberton Advertiser" Office, Herberton, September, 1892.

Gold Medal, International Exhibition, Paris, 1889. *Gold Medal, Exhibition of Mining & Metallurgy, London, 1890*

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Patentees and Sole Makers of

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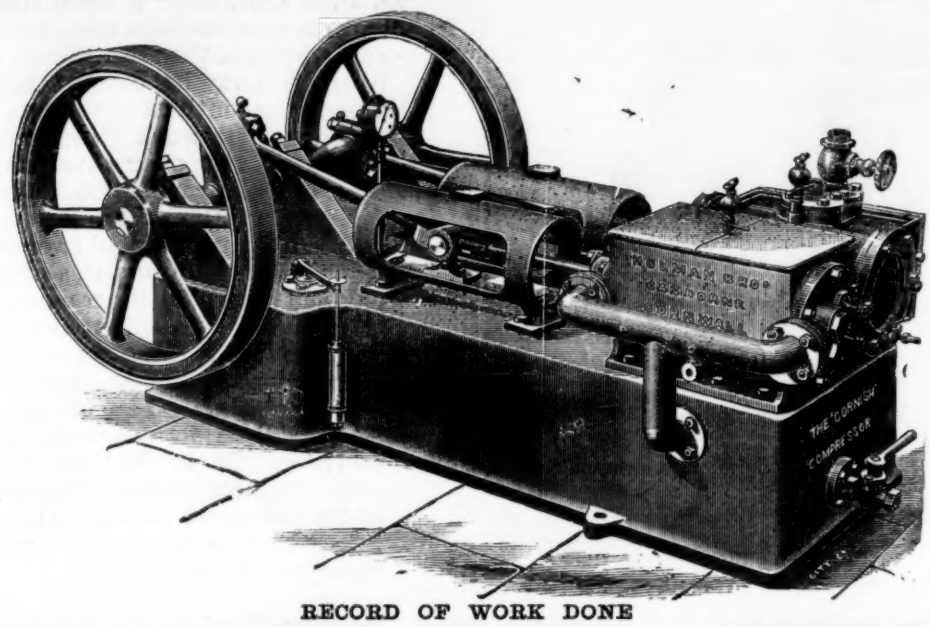

RECORD OF WORK DONE

At Botallack Mine, St. Just, Cornwall, **TWELVE MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** drove, sunk, and rose **288 FATHOMS** in **12 MONTHS,** equal to five times the Speed of Hand Labour

At Wheal Grenville Mine, Camborne, Cornwall, **SIX MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** started from the **150 FATHOMS** level and put up in **EIGHT MONTHS** a **11 FEET** by **5 FEET PERPENDICULAR RISE 46 FATHOMS 5 FEET 6 INCHES,** and about midway drove **1 FATHOM 5 FT.** No communication of any kind was effected until holing to the Shaft brought down from surface.

Estimates for ROCK BORING PLANT and GENERAL MINING MACHINERY on Application.

London Representative: Mr. E. M. TOUZEAU, Leadenhall Buildings, London, E.C.

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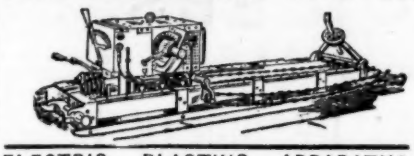
ELECTRIC LIGHT & TRANSMISSION OF POWER PLANTS

Jefrey Machines for Undercutting Coal,

WORKED EITHER BY ELECTRICITY OR COMPRESSED AIR.

OVER 400 IN USE.

FULL PARTICULARS UPON APPLICATION.



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HIGH OR LOW TENSION SYSTEMS.

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GOLD MEDAL, Inventions Exhibition, 1885
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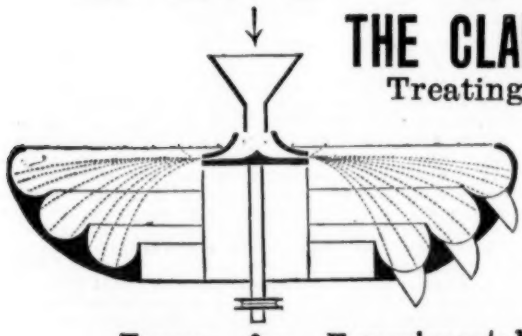
Highest Award at the Mining Exhibition, 1890.

DRY CONCENTRATION.



THE CLARKSON-STANFIELD CONCENTRATOR (LIMITED), are successfully Treating the ores of Gold, Silver, Copper, Lead, Tin, Zinc, Cobalt, &c., &c. of all degrees of fineness, from 30 to the finest meshes by their **NEW MACHINERY** which may be seen in operation at

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Homogeneous substances, such as Emery, Glass, Sand, Sulphur, Black Lead, &c., graded according to size in one operation.

Terms for Experimental Concentration, and for Supply of Machines on Application.

NEW PATENTS.

LIST of APPLICATIONS for New Patents relating to Mining Metallurgical, Engineering, Railway and kindred matters, specially compiled from official sources for the "Mining Journal" by Messrs Rayner and Company, Patent Agents, 27, Chancery Lane, London, W.C., who will forward all information regarding them free on application.

5103 Cornelius James Gullyes, 150, Strathnairn Street, Roath, Cardiff.—An improved grip bolt.—March 12.
5144 Francesco Kossuth and Luigi Teodoro Kossuth, 28, Southampton Buildings, Chancery Lane, London.—Improvements in steam boilers.—March 12.
5166 Peter Hayer, 22, Southampton Buildings, Chancery Lane, London.—An improved valve spindle for steam and other engines.—March 12.
5191 James Bibby, 15, Water Street, Liverpool.—An improved mixing machine.—March 13.
5211 Richard Brenner, White House, Station Road, Crayford, Kent.—A reciprocal bearing or reciprocal bearings.—March 13.
5234 John Deacon, 45, Woodcock Street, Birmingham.—Wood boring and drilling machine.—March 13.
5240 Edward Fellew Plenty, 57, Chancery Lane, London.—Improvements in steam generators.—March 13.
5245 William Phillips Thompson, 6, Lord Street, Liverpool.—Improvements in rotary engines.—March 13.
5251 Charles Rumley, 53, Chancery Lane, London.—Improvements in pumps and blowers.—March 13.
5257 Carl Ernst Vogel, 27, Martin's Lane, Cannon Street, London.—Improved water gauge for steam boilers.—March 13.
5284 Christian Black, 40, Chancery Lane, London.—Improvements in nut and pipe wrenches.—March 13.
5314 Septimus Leonard Anderson, Bank Buildings, George Street, Sheffield.—Improvements in magnetic separators.—March 14.
5319 Andrew Paul, 62, St. Vincent Street, Glasgow.—Improvements in rotary engines.—March 14.
5320 Gustave Lobbs, 71, Market Street, Manchester.—Improvements in steam boilers.—March 14.
5383 Thomas Sydney Lea and John Barlow, 3, Furnival's Inn, London.—Improvements in furnaces.—March 15.
5408 Herbert Lindley, 4, Corporation Street, Manchester.—Improvements in governors for motive power engines.—March 15.
5416 James William Larmuth and Robert Birken Howarth, 57, Barton Arcade, Manchester.—Improvements in rock drilling machines.—March 15.
5443 Marius Antoine Cluzeresse, 97, Newgate Street, London.—A mechanical motor, or apparatus for storing power.—March 15.

SPECIFICATIONS PUBLISHED.

4170, Miller, hydraulic pressing machinery, 1893; 4252, Holland and Hattis, rotary pumps, 1893; 4690, Yorke, lubricators, 1893; 7431, Dear, steam engines, 1893; 7459, Jackson and Ogden, cage hoist doors, 1893; 8057, Lattmann and Homstock, iron and steel, 1893; 8263, Tuxen, cooling pistons of engine cylinders, 1893; 21,193, Marlian, rotary steam engines, 1893.

The above specifications published may be had of Messrs. Rayner and Company, 27, Chancery Lane, London, at 10d. each including postage.

CONTRACTS OPEN:

FOR MINE, QUARRY, RAILWAY, AND ENGINEERING WORK, STORES, &c.

**** We shall be obliged by being promptly placed in possession of particulars regarding contracts open for competition, and of the results of successful tenders. In the latter case contract prices should be given.*

The date given is that by which tenders must be delivered, in nearly all cases further information can be obtained on application at the addresses given. In applying for such the name of "The Mining Journal" should be mentioned as the original source of the information, concerning which further particulars are required.

HOME CONTRACTS.

Sinking Well, March 31 (*Sheffield*).—For sinking a well, 60 feet deep by 12 feet diameter, at their Grimesthorpe Station, for the Sheffield United Gas-light Company. Specifications with forms of tender on application to the company's engineer, Mr F. W. Stevenson.

Railway Construction, April 2.—For the construction of new lines at Poulton, for the Lancashire and Yorkshire and London and North Western Joint Railways. Plans and specifications at the engineer's office, Hunt's Bank, Manchester.

Railway Stores, April 2 (*Dublin*).—For the supply of 500 tons of steel bullhead rails; also for 300 tons of cast iron chains, to be delivered into wagons alongside ship in Belfast, for the Great Northern Railway Company, Ireland, in accordance with drawings and specifications to be had of Mr. Henry P. Lews, secretary, Amiens Street Terminus, Dublin.

Sinking a Well, April 5 (*Windsor*).—For sinking a new well and other works connected therewith at their waterworks at Tangier Islands, Eton, for the Waterworks Committee. Specifications can be obtained, and plan seen, at the office at the works on and after 25th inst., from 9 a.m. to 4 p.m., upon application to Mr. C. Saintly, engineer, Tangier Islands, Eton.

Sleepers, April 10 (*London, W.*).—For the supply of about 30,000 creosoted sleepers, 250,000 clean sleepers and 2000 loads of rectangular Baltic redwood crossing timber, for the Great Western Railway Company. Specifications with forms of tender to be obtained of the secretary, Paddington Station, and the stores superintendent, Swindon.

Railway Construction, April 18 (*North Blyth*).—For the construction of railways at Cambois, and coal-shipping staithe at North Blyth, for the North Eastern Railway Company. Plans and specifications to be seen at the office of Mr. Charles A. Harrison, the company's engineer, Central Station, Newcastle-on-Tyne, on and after April 2.

Sinking Pits (*Aberbeeg, Mon.*)—For the sinking of two pits near Aberbeeg, Monmouthshire, to the steam coal measures. For particulars apply to Messrs. John Lancaster and Co. (Limited), Blaina, Mon.

Sluice Valve, (*Manchester*).—For the supply of one 24-inch sluice valve for the Waterworks Committee. Plans and specifications on application to Mr. T. H. G Berrey, Waterworks office, Town Hall, Manchester.

Stores, (*Glasgow*).—For the supply of stores for one year from April 1, for the Pumpherston Oil Company (Limited), 24, St. Vincent Place, Glasgow. Specifications and forms of tender on application at the office.

Driving Stone Drift, (*Ashington*).—For driving a stone drift 150 yards long. For full particulars apply to the Manager, Broomhill Colliery, Ashington.

OUR INQUIRY COLUMN.

TO CORRESPONDENTS.

Correspondents will please take note that all communications will in future be answered in this column and not through the medium of the post. All questions and replies should be accompanied by the name and address of the writer.

REPLIES.

MORES.—It would be natural for us to say that we, ourselves, were right, and our contemporaries in the wrong. As regards selling or buying, we would rather not advise in this instance.

G. P.—As far as we know he is a respectable and honest person.

SUBSCRIBER.—We should like to know more of the scheme before giving our advice.

A. N.—No scheme has yet reached this side.

READER.—The company has been reconstructed several times.

INQUIRER.—The annual meeting is next Wednesday.

R. P.—The funds are again exhausted. Reconstruction seems inevitable.

D. A.—Certainly. The company is in a sound condition.

SHAREHOLDER.—We do not care to recommend them.

A. W.—No information on the subject has reached us.

REX.—The concern is a private one.

.—The capital is £60,000.

T. A.—The company is in need of further capital.

R. T.—You have entirely misunderstood us.

JOHANNESBURG SULPHURIC ACID WORKS.—The sulphuric acid manufactory recently erected near Johannesburg by a party of English capitalists, at a cost for plant of £55,000, is capable of producing 2000 tons of acid per annum. The sulphur, which by combination with oxygen is converted into sulphuric acid, is obtained from pyritic concentrates purchased from the mining companies. All the sulphur but 1 per cent. is extracted, and the oxidised ore is then sent on to extracting works for the recovery of its gold contents. The demand for sulphuric acid is increasing daily, and its price per lb., when taken in large quantities as is done by the chlorination works, is less than that of the imported acid without the duty, which is 1d. per lb., and is fully equal in quality to the imported, being of full strength.

DAVEY, PAXMAN & Co.,

Engineers, Colchester.

MAKERS OF

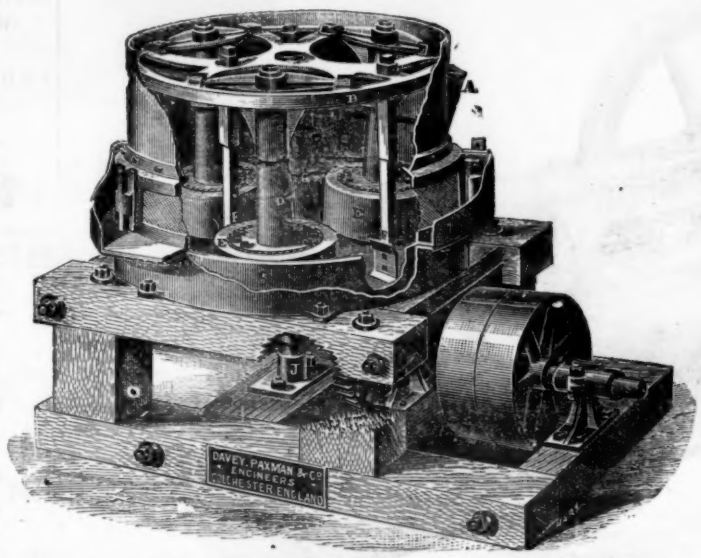
ENGINES, BOILERS, PUMPS.

AND ALL DESCRIPTION OF MACHINERY FOR MINING.

DAVEY, PAXMAN & Co., are SOLE Licensees and Manufacturers of the Huntington Patent Centrifugal Roller Quartz Mill for the whole World, excepting the United States of America, Mexico, and Australasia.

Telegraphic Address:

"PAXMAN, COLCHESTER."



Huntington's Patent Centrifugal Roller Quartz Mill for fine pulverizing in Concentration.

LONDON OFFICE

78 [late 139], QUEEN VICTORIA STREET.

D. P. & Co., after a great number of careful experiments have so improved and perfected the Huntington Mill that it must now be classed among the greatest inventions of the age. The excellence of its work is undoubted, and its superiority over Stamp Mills will soon cause a revolution in its favour for Quartz Crushing. Its first cost, and cost for freight and transit is much less than for stamps, it absorbs about half the power for the same output, and is continually crushing. It can be fixed and started in 12 hours, requiring for foundations only two pieces of timber 12 in. by 12 in. by 14 feet long, is more reliable than stamps, and has perfect delivery. It is used to its greatest advantage on gold quartz, for, because of its excellent amalgamating properties, it catches about 75 per cent. of the gold put into it.

Full Particulars on Application to

DAVEY, PAXMAN & Co., Colchester.

PROMOTERS.

BY E. HENRY DAVIES, M.E., F.G.S.,
Author of "Machinery for Metalliferous Mines"

THE history of a mining venture from its first discovery by a band of prospectors until its successful formation into a limited company is one of varied incidents, interesting alike to those who follow mining as a profession, and also to the general public who form the ultimate shareholders, whose money it is that is spent more or less wisely, and amongst whom the profits of success are divided.

In a recent article on "Vendors" (March 3rd, 1894), we traced the early attempts of the original prospectors to sell their property, and to bring it into public notice. We now propose to go a step forward in the history of the undertaking, and to deal with promoters, a large class of business men, among whom are to be found many honourable gentlemen who devote themselves exclusively to the promotion of companies, and who will not connect themselves with any business which will not bear the strictest examination.

Round about this central group are various circles of lesser lights until on the outside, we admit with regret, that there are men whose proceedings are shady, and whose method of doing business lands them sooner or later within the clutches of the law.

The crowd of lesser lights have around them a numerous body of satellites, so that it is a matter of considerable difficulty for the would-be vendor to approach the fountain head without passing through the hands of those whom we will term the middlemen of promotion. These introduce him from one to another, and do not omit to take a fee in the shape of a commission note for each introduction. As these commission notes are promptly presented at Somerset House, and are then stamped, it is probable that the State receives a valuable augmentation of its revenue from this source.

The vendor, coming up to London with a good proposal in his pocket, is usually ignorant of the ways of men in the City, and probably lets his mission be known to some chance acquaintance in a smoking room or on board a steamer. The man at once assumes an air of importance, congratulates "Mr. Vendor" upon his luck in meeting him, saying he is the one man in London who can put him in the way of doing the business straight off. In fact, he can introduce him to a "friend" who is in with all the financial houses in the City, and who will have no difficulty in raising the required funds. An appointment is then secured, and the "friend" duly turns up; a good deal of tall talk then takes place; the capital of the company is fixed; so much is to be paid to the vendor in cash and shares, so much for promotion, and so much for public subscription—in fact, the whole business is *coleur de rose*. The vendor is thus let to think that his business is in a fair way; and being in a good humour accordingly is inclined to accede to a cunningly worded proposition to the effect that, of course, business is business, and the friend cannot be supposed to work for nothing. A commission note is then drawn up, by which the friend is to receive a certain portion of the sale price if he directly or indirectly influences capital for the carrying out of the scheme.

The proposition is then hawked about from office to office. The friend speaks about it to other friends, dilates upon the enormous profits to be made, blows his own trumpet with a vigorous blast, and succeeds, not in getting the capital, but in getting the undertaking regarded with a certain amount of suspicion, which in business of this nature is fatal to success. This too often is the only result obtained by the vendor, who, after waiting about for a few weeks in the City, gets disgusted, and retires into oblivion, his scheme sharing the same fate in the pigeon-holes of some obscure office.

In other cases the vendor takes his property direct into the hands of a solicitor, who, having an eye more to the accumulating of fees than to permanent success, possibly succeeds in gathering together a few gentlemen utterly ignorant of mining and of no financial standing, who form themselves into a syndicate, putting up, perhaps, a few hundreds for legal and secretarial expenses. With this money they hope to induce others to come forward with the working capital, giving them the direction of the business, and allowing them substantial directors' fees.

These tactics end frequently like the former—in failure; but even if a company is formed it is hampered by the original syndicate, and too often is ruined, as we have pointed out in our former article on the "Management of Mines," December 2nd, 1893, by the ignorance of those to whom the conduct of affairs has been entrusted.

The demands made by promoters for their services are often of so exorbitant a nature as to exceed those of the vendors, which, as we have previously intimated, are not always of a modest character, and when to these we have to add the accumulated commissions promised to various middlemen, the sum requested from the public has mounted up to a very respectable figure. Promotion is at the best a risky business, and for every success at least a score of failures can be counted, and hence the desire of the promoter to recoup himself by one successful venture for the many failures over which he has spent time and money in the past. Nor is this unnatural. We only suggest that the figures asked shall be kept within reasonable limits, such limits, indeed, as would not entail the scorn and derision of the public if the affairs of the company ever required official investigation.

The American system of company promoting differs in some respects from our own. In a recent case, which came under our notice, the company was duly formed with a board of directors composed of substantial business men, and these paid the preliminary expenses of formation. In order to provide the working capital, a large proportion of the share capital was set aside as "treasury stock," with a guarantee by the board that whatever monies were realised by the sale of this stock should be applied solely to the development of the property. The Treasury was then offered to business brokers and financial agents at a low figure, say, 1s. for a $1 share in the hope of inducing them to purchase a secure option on large blocks to be afterwards distributed among their clients at such a figure as would naturally leave them a margin of profit. The cost of promotion is thus at the charge of the promoters, who must look for their profits and the reimbursement of any outlay from selling the shares at an advance upon the purchase price. The promoters guarantee to take a minimum monthly number of shares from the company, and on the strength of this guarantee the latter commence operations, limited, of course, by the necessity of keeping the wages' sheets and costs under the amount guaranteed.

The object of the promoters is to form a market for the shares, and by bringing the undertaking to the notice of the public induce them to take up the shares. The process of forming a market is little understood outside financial circles, but it is greatly facilitated if during that period the operations at the mine are of a satisfactory nature, and the weekly reports prove the truth of the statements made in the prospectus.

As the interest taken by the promoters generally ceases when the capital has been procured, it may reasonably urge that as vendors will in the future have to take a proportion of the risk of success, so also the promoters, who are largely influential in bringing the business to the notice of the public, should likewise be dependent, in some measure, for their remuneration upon the success of the mine.

The promotion of a company can also be effected through one or other of the syndicates who devote themselves to this business. The lines upon which they work is to contract to register the company, and issue so many thousand prospectuses for a fixed sum, which is usually moderate. In addition they exact a commission of about 5 per cent. upon the amount of capital subscribed by the public, thus taking to some extent the risk of raising the funds upon their own shoulders.

The depression in business from which all trades and professions are alike suffering at this moment has hit the company promoter hard, and this, together with recent exposures in the public Press, has, for a time, practically put a stop to his operations. He is, doubtless, however, employing the time in devising schemes for improving the fortunes of the community at large; for, according to the information supplied to us, the number of proposals ready for launching, when the moment is propitious, is something phenomenal.

The company promoter is almost a necessity of the existing method of doing business under the Companies' Acts. Whether those Acts will ever be altered we are not prepared to say, although we have heard rumours of official enquiries being made into their working, due doubtless to events which are still in the lively recollection of the investing classes.

With regard to the company promoter in general, he is at present under a cloud, and this is largely due to the black sheep which are to be found in this as in every other flock in greater or less numbers. The vendor must exercise ordinary business care as to the hands to which he confides his work, avoiding men who have "friends," and going straight to firms of established reputation.

If the proposition is good and will bear close investigation it will either be taken up or some good and sufficient reason be given for holding it over. If the property is not a good one—and the experts employed by first-class firms are the best judges of this—then the sooner the better it is abandoned for the sake of all concerned. At present the market is glutted with schemes of all sorts, and, as we hinted in our recent article on "Vendors," it is only the soundest business, offered on the most favourable terms, that stands the chance of being enquired into by the promoting world.

THE FOREST OF WYRE COAL FIELD.—Mr. Daniel Jones, F.G.S., lately read a paper at Mason's College, Birmingham, on "The Structure of the Forest of Wyre Coal Field," with special relation to the recent discovery near the Tipp Farm House, between Arley and Highley, at a depth of 300 yards, of a 6 feet seam of bituminous coal, before a distinguished body of geologists and mining engineers, assembled under the joint auspices of the Dudley and Midland Geological Society and Field Club, and the South Staffordshire and East Worcestershire Institute of Mining Engineers. Mr. Jones referred to the impossibility of correlating the South Staffordshire thick coal in a direct manner with the coals found in the Shropshire coal field. He traced the course of the former northward to Kyrley, where it is found to be divided into eight different seams, and he correlated the Wyrley section with that of Lodgewood in Shropshire, and showed not only the correlation of the thick coal, but of the other seams and some of the iron stones from the Chance Penny Stone and the Silurian base. From this he concluded that the bottom coal of South Staffordshire, called deep and shallow at Cannock, was the same as the Clod Randle and the Little Flint coals of Shropshire. He then showed that the Coalbrookdale coal field had been largely denuded, not only along the east side, but also the whole of the southern end, and that the denudation had left an outlier of Clod Randle and Little Flint coal at Shirlot, a point between the Coalbrookdale coal field and Harcott and Kinlet, where similar "sweet" coals are found, and which may be correlated with the Clod Randle and Little Flint coals of Coalbrookdale. He afterwards pointed out the great importance of the Spirorbis limestone as a datum line, and showed that it ranged from the Breidden Hills to the Abberley Hills, together with the younger coal measures in which it is found; that it overlies the best Clod Randle coal at Aimes, near Broseley, as it does at Harcott and Kinlet, and so more closely confirms the correlation between those two points. He called attention to the fact of these younger coal measures resting upon the old red sandstone base without any intermediate "sweet" coals, except at Billingsley, Harcott, Kinlet, Seckley Wood, and Bavenney Wood. He showed the reason for their being there, stating that it was due to the occurrence of the volcanic nature of the Kinlet Knowl, where a mass of trap had been ejected in the same way as patches of the coal measure at Coombrook and the Brown Clee had been preserved by a basaltic covering. He considered that an area of about 12,000 acres of these "sweet" coals had been so preserved. He referred to the barren condition of the coal measures south of the Dowles Valley, and round the town of Bewdley, where even the upper coals were absent, and had been denuded by the action of the Severn and the Dowles Brook. He concluded there was no relation between the coals of the Rock and Gibhouse district and the "sweet" coals of Kinlet, which were identified by the associated Spirorbis limestone, which clearly established what they were. Professor Lapworth said Mr. Jones had made several very important suggestions, both from geological and economical points of view. He had shown what great changes had taken place in the old floor upon which the carboniferous deposits were laid, and he thought also that Mr. Jones had shown that there must, with regard to the coal measures, have been two distinct periods of deposition which had produced the "sweet" and the "stinking" coals respectively.

TEN THOUSAND POUNDS PER ANNUM MAY BE EARNED at too great a sacrifice, if we ruin our health and happiness during its accumulation. Although money is a necessary article to possess in order to obtain the means of existence, it cannot purchase love, friendship, or immunity from the dangers and pangs of disease. The millionaire has often envied the toiling labourer his hearty appetite and sturdy health, and would gladly have sacrificed a large amount of his wealth in exchange for these blessings. Holloway's Pills, however, can give health to the most delicate. They are the precious key which can open the door leading to the smiling valley of health. They purify the system and give the essentials of strength for the blood.

REASONABLE GEOLOGY.

By FREDERICK DANVERS POWER, F.G.S., M.A.I.M.E.

I.

MAN is a reasoning being, and applies his reason to elucidate obscure things. Sciences owe their existence to logic, without which they would be a mere jumble of observed facts gathered together haphazard. There is no science that requires the assistance of man's reasoning power more than geology, the practical outcome of which is mining; and yet, since the death of Alchemy, there are, perhaps, few sciences in connection with which we hear such crude and absurd arguments. I do not refer to the trained scientist, who has done as good work in connection with the comparatively new science of geology, as he has in connection with allied subjects; but to the pseudo-scientist, who allows his imagination to run riot with the one or two facts he possesses, till even he is unable to distinguish fact from fiction: such ill-informed people, judging a whole by the few bits of badly digested knowledge they possess, do incalculable harm by promulgating false ideas, and bring ridicule to the subject of which they constitute themselves champions. Every miner, notwithstanding his frequently avowed objection to theory, attempts to form one, when confronted with unusual phenomena, as soon as he has two ideas to put together. Frequently they put the cart before the horse, and begin to theorise before they have collected the necessary data for their work; and as this data comes to hand they endeavour to make it fit their views rather than make their theory fit the facts. There are others again who—from an inherent desire to prove that things are not what they seem and have been accepted to be for generations—attempt to throw doubt on the simplest phenomena, thereby obscuring rather than throwing light on the subject. Some people seem to think that we have come to the end of all knowledge; that they know everything which is worth knowing; and that any information others possess which they have not is of no value. This tends to cast discredit on learning, and to discourage enlightened investigation. Statements are often made that have no foundation in fact, and these are handed down from one to another, each adding to or subtracting from the original story to suit his individual taste, till at last some purely fanciful description of a phenomenon, which possibly being past cannot be checked by later observations, finds its way into print for *savants* to puzzle their brains over in the future, and to reconcile with modern views as well as they can.

The origin of an ore deposit has a direct bearing on its probable permanency and richness; it will thus be seen that it is highly important to the miner that he should know the true cause of his lode, and the source of the ore, not only to assist him in developing the deposit, but also in searching for similar ores.

Much misunderstanding has been caused by the improper use of words. An illiterate person hears a technical expression, and thinks he will raise himself in the estimation of his fellows by using the same, which he takes the first opportunity of doing; in many cases placing the wrong construction on it. Maybe his mates catch at the word as being quaint, and perpetuate its false meaning until in time the new interpretation is generally accepted, owing to its common usage, and then we have one more opportunity of confounding different ideas that are expressed by the same word. A word with two distinct meanings is really two words. An apparently genuine but really illogical argument is often caused by the use of ambiguous terms, which possess different meanings in different localities; for instance, "black jack" may mean zinc blende, cassiterite, tourmaline, menacinite, chromite, or almost any blackish mineral, the miner is unable to supply with its proper specific name. To a mineralogist the term "black jack" simply implies that the substance belongs to a number of bodies that possess one property in common, viz., blackness, and that property may happen to be accidental and not a characteristic one; for cassiterite may be black, brown, red, or grey; tourmaline can be black, green, red, &c. But if the special name of the mineral referred to under the general term "black jack" was mentioned, then by the utterance of that word alone the mineralogist would understand not only the colours peculiar to it, but its chemical composition, physical properties, value, &c. The miner understands by the term "black jack" that mineral which is so designated in his own locality, and should some other be intended, then useless disputes are apt to arise, which would be avoided by employing less general words. There are many other instances that might be mentioned; for example, "mundic" may be either iron pyrites or mispickal. Topaz may mean a mineral that rightly owns the name; a yellow crystalline variety of corundum known as Oriental topaz, or a yellow quartz crystal, called false topaz. Asbestos may be a variety of hornblende, to which the name was originally given, or a variety of serpentine.

Miners often object to what they call long scientific words because they say they don't understand them. It is not, however, the length of the words so much as the confusion in the mind of the miner as to the exact meaning of the words that frighten him, because he is more accustomed to use his provincialisms rather than well selected words more suited for general practice in these days when miners travel about in different countries. Moreover, he frequently makes use of scientific words in his daily occupation, though probably he is not aware of it. When speaking of "pyrites," he little thinks it is derived from a Greek word meaning fire, given to it on account of the spark it emits when struck by steel; a phenomenon he observes every day, though perhaps it never enters his head to enquire the reason why. Sometimes confusion arises between the use of a term in its collective sense and special meaning. To again make use of our old friend pyrites as an example; it may be used as a family name for certain sulphides, *e.g.*, iron pyrites, copper pyrites, arsenical pyrites, magnetic pyrites, tin pyrites, &c., or as a special name for one particular mineral, viz., iron pyrites.

There are few causes that have thrown so much discredit on theories applied to geological subjects as fallacious reasoning. We hear of arguments that simply bristle with logical fallacies, and are a cause of offence to our very instincts. Some argue from a special case to a general one, or *vice versa*; others assert a conclusion that has no connection with the proposition from which they argue; or assume one thing is the cause of another, without sufficient proof; in fact, the modes of reasoning which deceive are numerous, and their application various.

Reasoning gives us knowledge, and the best way to prepare ourselves for increasing such knowledge is to study our subject long and carefully from all sides; in other words, to saturate ourselves with it. The study of a subject, however, involves a knowledge of others; so, before we are in a position to argue thoroughly, we must make ourselves masters of allied sciences. Intelligent and careful observation is the foundation of logical sequence, and it is by no means easy, even for the most honest observer, to prevent his wishes or opinions from colouring the true facts, by unconsciously placing too much stress on a favourite subject, and thus distorting facts by an unbalanced line of thought.

Certain phenomena which have been carefully studied and classified are reduced down to systems, which, for the sake of convenience, we term "Laws of Nature;" these laws are constant, and may be relied upon. Sometimes, however, it appears as if they did not always act when they should, but on investigation we find that one law has been temporarily modified by another. Take, for instance, gravity; the earth attracts bodies towards its centre, but during volcanic eruptions we see bombs hurled up in spite of gravity, and still that universal force is acting all the time, and prevents the bombs from going as high as they otherwise would, and eventually, with the assistance of the friction of air, overcomes the transient superior force developed by the sudden expansion of gases, and the bombs fall to the ground. Here they come to rest for the time being, but the force of gravity is ready to drag them lower, if only their support were removed, and will also resist the efforts of those who attempt to raise them off the earth.

We may accept certain truths at once as axioms to assist us in our arguments, such as that there is no effect without a cause; that matter is never annihilated, but is simply altered or transplated, &c. Phenomena occurring at the present day in connection with rock building are due to the same laws of nature that laid down similar deposits in ancient times; we must remember, however, that conditions were not the same in degree as they are now. The first waters condensed were warmer than our oceans of the present day, and would, with their dissolved salts, have a more powerful chemical action than the diluted cooler seas: also the terrestrial heat, overpowering the present effects of the solar heat, would nullify what we call seasons, and the want of these would in turn affect the formation of deposits, such as nitre, that are to be found in arid districts.

There are two classes of reasoning known as Inductive and Deductive; they may be employed singly or combined, in order to get at the truth of matters. By inductive reasoning we first find out by observation, with the help of our senses, what is true of many different things; we then try, by proper reasoning, to discover the laws which govern them by forming hypotheses. We draw our conclusions, and finally verify them.

By deductive reasoning we do just the reverse: we find out what will happen in consequence of a so-called law of nature, if something else is true.

Unfortunately, life is not long enough for each person to observe and test everything for himself; we are, therefore, obliged to accept the work and conclusions of others, in many cases; but in doing so we cannot be too careful in the selection of the individuals whose results we accept, and should be satisfied that they are careful experimenters and observers, free from bias, and sound in their arguments. It is not necessary to see a thing actually done in order to prove how it was carried out: we may observe the result, and then by logical arguments be led to conclude how things were in past ages. Man did not happen to exist during the creation of the world; he can only get information on that point by reasoning. It does not do simply to wait and watch nature, as many of her actions are too slow for man to benefit by them during the limited span of his life, many ages being required to bring about results when left to themselves; besides, they are so frequently complicated that by leaving matters to observation alone, it is almost impossible to unravel the various phenomena concerned, so that we are forced to fall back upon experiments. Nothing must be considered too insignificant to be noted; the results of our conclusions may be stated in a few sentences, and may appear very simple, and when the question is one of "Yes" or "No" you have equal chances in your favour, if you make a guess at the solution, which most persons are satisfied with doing; if, however, you are a conscientious worker, the mass of evidence that accumulates is often enormous before you are satisfied that your contention is proved, and many of your observations have to be laid aside on further investigation as foreign to the subject. We should first observe facts, without hampering them with theories; we are, however, so accustomed to rapid thinking that we are apt to jump to conclusions prematurely, and to note as observed facts what are really our assumptions.

A man notes a rounded boulder on the top of a mountain; instead of stating facts as he really sees them, and describing its environments, if not a geologist, he will probably call it a waterworn block, and assume that it had been brought into that position by some great fluvial force. Or, again, he may observe a ferruginous concretion, loose in a rocky hollow, the entrance to which is too small to allow it to pass through, and wonder how a piece of shingle could get in through such a small space. Were he to note the surroundings, it is true he might find similar concretions loose in the soil, in the beds of creeks, or on the beach, which might appear as if their roundness were due to the action of water rolling them about; but closer observation would show these concretions in their matrix in various stages of formation. We not only want to know empirically that something happens, but we desire to ascertain why it happens; the origin of the results we see, and why out of all the possible combination of circumstances that suggest themselves to us, nature should have selected the one she has. In order to obtain this information we generally have to resort to experiments which increase our store of facts, and enable us to reason; in fact, we should always experimentalise when possible, so as to assist us in coming to a correct conclusion.

Things, the nature of which we desire to know, can be regulated and combined in such a way that their actions under definite conditions can be observed. In this way, by interfering with things, we get results more quickly than we otherwise would, and under conditions we might not be certain of in nature; besides, we might not be prepared to observe when the opportunity occurred. In experimenting for the discovery of laws governing nature, it is not always convenient to imitate her various irregularities, which would only cause confusion; we, therefore, adopt ideal cases for the sake of convenience, which generally takes some regular form with which we are acquainted, *e.g.*, experiments on capillary attraction are conveniently carried out in perfect cylinders, while investigations on falling bodies are generally conducted with spheres. Experiments are always liable to errors of manipulation, observation, and the choice of methods, which should be eliminated before deducing our points.

By experiment, copper sulphide may be formed by fusion, in the wet way by precipitation, or by pressure. In the latter case Spring found that by subjecting a mixture of sulphur and copper filings to a pressure of 5000 atmospheres copper sulphide was formed. This, though an interesting fact, will hardly assist us in determining how chalcocite is formed in our mineral veins, as we cannot conceive the conditions in nature under which sulphur and finely comminuted copper could be brought together to form the masses of mineral we find. If our experiments really follow out the natural condition, well and good; but it is by no means easy to imitate nature, or to carry out our experiments under exactly the same conditions as they are in her laboratory, where time and dilute solutions play such important parts. Many ingenious experiments have been performed, which have subsequently proved to be useless for demonstrating how certain results have been caused, because those who experimented did not sufficiently study the subject they wished to imitate.

(To be continued.

MINING IN MEXICO.

MEXICAN METHODS OF MINING.

BY J. HOWARD PALMER, B.A.

IN a preceding article some mention was made of the frequent use of long adits in the mines, and of the steadiness and perseverance with which the Mexicans prove their lodes by this method. They have, however, still a good deal to learn in adit driving; the rise of the tunnel necessary to give proper drainage is generally a matter of guess work, and it never seems to enter their heads that it is more economical to drive straight ahead than to go winding about: the adits are apt to resemble a series of elongated S's, and their height and width are by no means fixed quantities. After all, these are not very grave faults, for if the vein shows favourably in the roof, or to the right or left, it is surely wiser to spoil the appearance of the work, rather than miss payable ore or lose the vein.

Rock drills and air compressors are beginning to come into use in Mexico, but the advantage of using them is somewhat doubtful, unless there is great urgency for the completion of the work in hand. Fuel is generally so dear, and not likely to become cheaper, that the comparative costs of machine drills and hand labour work out in favour of the latter for ordinary work. In fairly hard ground a gang of Mexicans will drive from 3 to 4 metres a week, at an inclusive cost varying between $30 and $40 per metre. Two air drills will, perhaps, accomplish 10 metres per week, but each metre will cost from $80 to $100. Half of the expense of driving by machines will be incurred for fuel, upkeep of machinery, and the whole question of hand v. machines resolves itself into one of the price of combustibles. When it is necessary to speedily unwater a mine by an adit, or to reach an already proved deposit in order to put a concern on a paying basis within a certain time, in such a case, of course, the advantages of using rock drills are incalculable, but under ordinary circumstances they are rather luxuries than otherwise. A further difficulty in the use of machine drills lies in the inability of the native miners to work them. Skilled drillmen have to be imported from England or the States, and if they fall ill or fail to agree with the Mexicans, the work has to suffer until fresh men can be procured. Big mines, however, in which development work has to be well ahead of the stopes, can easily afford an installation of air compressing machinery and drills, and the gain in time and efficiency will amply compensate for the increased expense of working.

The Mexicans are not very good timbermen, and the reason is that they do not have the necessary experience; timbering is not often required in the deep silver mines. In working the dry sulphide ores, at any rate, the veins are generally very compact, and the country rock being of primary formation very seldom requires support. When there is any danger of a run the Mexicans prefer to build walls or arches of strong masonry, and in this method of securing the workings they are very clever indeed. In many districts timber large enough for mining purposes is simply not to be obtained except at prohibitive prices, and masonry is much cheaper and lasts for ever. Still, timbers are often used in patches of wet and disintegrated ground, the spaces between them being filled in with poles 2 or 3 inches in diameter, placed closely together, and supported by the large sets.

Stoping in Mexico is often carried on very carelessly, and without much regard for safety; in the eagerness to get out every available scrap of ore, pillars are taken down, which should never have been meddled with, and a mine thus becomes dangerous to work in, long before it is exhausted, and future development means much avoidable expense and trouble. The native mining is at its worst when the ore is found in rich stringers between 1 and 2 feet wide. When this is the case, mining is apt to degenerate into "burrowing" without plan or system, and one finds drifts and winzes, through which it is scarcely possible to crawl, running in all possible directions. If an English company takes over a mine like this, perhaps the best way is to disregard the old workings altogether, and start afresh well below them. It is no use looking for ore where Mexican miners have been before, for they scrape a vein as clean as dogs picking a bone, and only give up because the water beats them.

Vertical shafts are not very common in Mexico, and a descent of one is not a particularly pleasant experience. Cages are rare, and man-engines are not known, so the usual way of going down is being tied on to the cable. The means of support is a piece of strong webbing, broad in the middle, and gradually diminishing to the thickness of a rope at each end, and called a caballo. The broad parts go around the person, and the ends are secured to the cable by a dove-hitch, or similar knot. One is tied up at the top and swung out over the mouth of the shaft with a sensation, at first, of being "turned off" by Jack Ketch. Going down, it requires some practice to keep clear of the sides, which are not so squared off as they might be, and the trip possibly ends with being soused in the dirty water of the sump below. The ordinary miners are not allowed to use the shaft, but have to go up and down by the ladder-way, which winds more or less spirally round the shaft, and entirely distinct from it. By law every mine has to be provided with two outlets, and as fast as a shaft is sunk a ladder-way is made as well. It is not surprising that the Mexicans prefer to make use of shafts as little as possible so long as the means of hoisting men and material are so primitive. There are, however, some splendid shafts of entirely native construction. The shaft, for example, of the famous Valenciana Mine, at Guanajuato, is 400 metres deep, and 8 metres by 12 throughout, and employs six different hoisting engines with cages and tunnels. Valenciana, however, is perhaps the largest and oldest mine in Mexico.

This sketch has endeavoured to give some account of the topography of the purely Mexican mines, and in a future article the writer hopes to give an idea of the way in which the miners arrange their work, and the manner in which the ore is prepared for treatment.

BENGAL COAL.—The record for the past year of some of the Bengal coal companies is not, on the whole, satisfactory, says *Indian Engineering*, and the variations in the results are not only difficult to reconcile, but somewhat startling as regards their figures. One company is said to equitably yield a dividend of 12 per cent. per annum, while another, the Borrea, complains bitterly of the losses and shrinkages which caused a return of something like zero on a capital outlay of 5 lakhs of rupees. This is bad! The results of the working of the Damuda Coal Company for the half-year ending December 31, 1893, are no better, if not worse, than that of Borrea. The Bengal-Nagpur concern, although declaring a dividend at the rate of 4 per cent., does this, we are afraid, at the expense of future working, as the amount carried forward is practically infinitesimal.

THE DURHAM MINERS AND CONCILIATION.—At a meeting of the Durham Mining Federation Board, on Wednesday, the question of the formation of a Conciliation Board came up, the miners having decided to leave the matter with the board. The board approved of the proposal, but the other sections having no power to deal with it, the matter was adjourned that the enginemen, cokemen, and mechanics might consult upon it separately.

OBITUARY.

DEATH OF CAPTAIN LOVETT CAMERON.

We regret to state that Captain Lovett Cameron, the African explorer, whilst returning from hunting with Lord Rothschild's staghounds, on Monday, was thrown from his horse, and so seriously injured that he succumbed four hours afterwards. Captain Cameron was born at Radipole, near Weymouth, in 1844. He became a naval cadet in 1857, and captain on the retired list in 1891. It was during his service on the East Coast of Africa that he acquainted himself with the Swahili language and the habits of the natives, and in 1872 he was selected by the Royal Geographical Society to take charge of the East Coast Livingstone Expedition, after Stanley's report that that great traveller had been found. Though Dr. Livingstone's death destroyed the original object of his journey, he determined to cross the Continent; in so doing he covered 5000 miles on foot, and was the first European traveller to cross Central Africa from east to west. In 1877 he published the narrative of his great journey under the title of "Across Africa." He accompanied Sir Richard Burton in 1882 to the Gold Coast, mainly with the view of investigating its gold resources. Much valuable information was, however, collected concerning the "Hinterland" of the Gold Coast in all its aspects, which was recorded in a work by himself and Sir Richard Burton, published in 1883, under the title "To the Gold Coast for Gold." Captain Cameron was connected with a company to develop the Portuguese territory lying between the Zambesi and the Soangwe, which also claims rights in British Central Africa. To him belongs the honour of first pointing out practical means of civilising Africa by the formation of chartered companies, construction of railways, and the placing of steamers on that "marvellous highway which nature, by means of the rivers and lakes of Central Africa, had laid down from the Mozambique to the Mediterranean Sea."

AMERICAN VERSUS BRITISH COAL.

A NEW COMPETITION.

WHEN, during the strike of the Midland colliers last year, says the *Glasgow Herald*, it was stated that coal was being imported into England, not only from the Continent, but also from the United States, incredulity not unmixed with alarm was expressed. It is true the imports were small, and that the coal brought over from Belgium was found unsuitable for the English factories. But while not much American coal was actually landed in this country, a good deal of it was consumed by Atlantic steamers, which would otherwise have been British coal, so it came to the same thing. What, then, are the possibilities of the United States competing with us in coal on a permanent basis? Great Britain has, at present, the cheapest coal in the world, but it is not generally known how the cost of production has been brought down in the United States to that of the level of many of our own coal fields. Little room remains for doubt that during a "famine," produced by the recurrence of such a crisis as that of last year, opportunity would be found for launching American coal extensively into our markets. It would be all a question of freight, and freight is not a question of profit in these days of ocean tramps and fierce competition in shipping.

How very closely the coal output of the United States approaches our own may be seen from the following statistics of the production of each coal-bearing State. The figures are in "short tons" (*i.e.*, 2000 lbs.), and we append the reported average price obtained at the pits and the number of men employed:—

State.	Tons.	Average price. $ c.	Men employed.
Alabama	3,529,312	1·5	10,075
Arkansas	535,558	1·24	1,128
California	85,178	2·46	187
Colorado	3,510,830	1·62	5,747
Georgia	215,498	0·99	467
Illinois	17,862,276	0·91	34,585
Indiana	3,345,174	1·8	6,436
Indian Territory	1,192,721	1·71	3,257
Iowa	3,918,491	1·32	8,170
Kansas	3,097,276	1·31	6,559
Kentucky	3,025,313	0·92	6,724
Maryland	3,419,962	0·89	3,886
Michigan	77,090	1·56	230
Missouri	2,733,949	1·23	5,893
Montana	564,648	2·36	1,158
Nebraska	1,500	3·00	—
New Mexico	661,330	1·62	1,083
North Carolina	6,679	1·44	90
North Dakota	40,725	0 96	54
Ohio	13,562,927	0 94	22,576
Oregon	34,661	4·29	90
Pennsylvania bituminous	46,694,576	0·84	66,655
Tennessee	2,092,064	1·13	4,926
Texas	245,690	2·32	871
Utah	361,013	1·56	646
Virginia	675,205	0·86	836
West Virginia	9,738,755	0·80	14,867
Washington	1,213,427	2·28	2,564
Wyoming	2,503,839	1·27	3,133
Total	126,856,381	0·99	212,893
Pennsylvania anthracite	52,472,504	1·57	129,050
Grand total	179,329,071	1·16	341,943

These are revised figures for 1892. Those for 1893 are not yet available, but will probably show a larger total than ours, as the output in Great Britain last year was between 15 and 20 million tons less than in 1892, owing to the strikes. The first thing in the above list that will surprise most people is the wide distribution of coal in America. No fewer than 29 of the States now yield coal to some extent. A wide variation will be observed in the average prices netted in the several States, and the average of the whole is materially affected by the high cost in the distant regions of California, Montana, Nebraska, and Oregon. Excluding these, and looking at the industrial States of Illinois, Ohio, Pennsylvania, Virginia, &c., the average would seem to be rather under than over a dollar, or 4s. per ton. Pennsylvania is, of course, the largest producing State, and the output of both bituminous and anthracite coal there is now so enormous as to suggest a maximum nearly, if not already, attained. But in other States the coal industry is yet only in its infancy. Illinois, the second greatest producer, and Ohio, the third, have not yet reached their records by a long way, and yet it is doubtful if either of these States has the capacity for development of West Virginia. As it was from this State that the reported shipments were made to the United Kingdom last year, and as it is from this State that the bunkers of Transatlantic steamers are being replenished, it is important to know what are the conditions and prospects of the West Virginian coal fields. A special report from Mr. Peel, Second Secretary of the British Embassy at Washington, timeously supplies some gaps in our information.

To begin with, then, it may be noted that while the State of West Virginia is as yet only fourth in the list of coal producing States, it has an estimated coal area one-third greater than that of Pennsylvania (16,000 square miles, as against 12,000 square miles), and equal to about one-thirteenth of the total coal area of the Republic. Not only that, but the coal fields are pretty evenly distributed throughout the State itself, and of 54 counties at least 50 are known to have coal. It is stated that the coal beds of West Virginia exceed in extent and value those of any other part of the American Continent, that they are the most easily and cheaply worked, that they produce the best qualities of coal to be found in the Western Hemisphere, and that they exist in close proximity to rich deposits of iron ore and limestone. Now, while these facts may have only a local interest at present, they may have far-reaching consequences. They all point to West Virginia becoming the great coal State of America, and the association of coal mining with iron working points to a lower cost of production of the fuel than is shown in the above table.

Next, we have to remark the very rapid development of the coal industry of this State, as shown in the following table of output:—

Annual Output of West Virginia Coal Mines in Short Tons.

	Tons.	
1873	672,000	
1874	1,120,000	
1875	1,120,000	(estimate).
1876	896,000	
1877	1,120,000	(estimate).
1878	1,120,000	do.
1879	1,400,000	
1880	1,568,000	
1881	1,680,000	
1882	2,240,000	
1883	2,335 000	
1884	3,360,000	
1885	3,369,060	
1886	4,005,796	
1887	4,881,620	
1888	5,498,800	
1889	6,231,880	
1890	7,394,654	
1891	9,220,665	
1892	9,738,755	

The industry has reached its present great dimensions practically within 20 years, and has doubled within the last six years. The greatest output is in what is called the Kanawha field, which stretches along the valley of the Kanawha river, from Charleston to the mouth of the Gauley, a distance of some 40 miles, and which is intersected by the Chesapeake and Ohio, and the Kanawha and Michigan Railways.

Taking the total coal production of West Virginia in 1892 at 9,738,755 tons, we find it distributed as under:—

Details of West Virginia Coal Production in 1892.

	Short Tons.
Loaded at mines for shipment	7,560,790
Sold and consumed locally	441,159
Used at mines for steam, &c.	49,563
Converted into coke	1,687,243
Total output	9,738,755
Valued at	$7,852,114
Average price per ton	80 cents.
Average number of working days in 17 counties.	228
Total number of miners	14,867

The general character of the country is so regular that borings below the river level have hardly been attempted yet. Practically mining so far has been confined to belts within 10 miles of the river, reached by short lines of railroad, and with very little sinking. It is this easy mining that has rendered the Kanawha coal field so attractive to small capitalists hitherto, but in the future operations will probably be conducted on a greater scale. The Kanawha fields produce—Splint coal, used for household purposes, and also as a high-class steam coal; it requires careful mining, but stands transport well, and is in special demand in the far West, because it bears the long carriage better than any other coal produced in the United States. Gas coal, a softer and more easily mined coal, which, although used chiefly for gas making, is also employed as a steam raiser; steam coal specially adapted for steamer boilers and factory furnaces; and cannel coal—in limited supply—used in the gasworks. There is also a large production of coking coal; and it will be seen from the above table that no fewer than 1,687,243 tons were made into coke in 1892. The ovens employed are of the familiar beehive shape, although other patterns have been tried. The demand for West Virginian coke is said to be steadily growing, because it is made from a very pure coal, practically free from sulphur.

The Kanawha seams range from 3 to 6 feet in thickness, but some are even less than 3 feet, down to 30 inches or so. The method of mining is much the same as that practised everywhere, but one peculiarity of the Kanawha Mines is that fire damp is unknown in them. This is said to be due to the workings hitherto having always been above water-level, and the immunity from explosions cannot be expected to continue as the workings get deeper and further from the outcrop. The accidents that have been recorded in these mines have been for the most part the result of carelessness or haste—falls of stone or coal, due to the men being in too great a hurry to attend to the props, &c.

Of the 14,900 coal miners in West Virginia, about 3000 are employed in the Kanawha field, and the largest mine employs 600. They are a mixed lot of Americans, English, Welsh, Poles, and Hungarians, but the English and Welsh miners are always preferred by the managers. The men live at various distances from their work—some as far as 10 miles away—and numbers of them have plots of from 2 to 15 acres of land, on which at odd times, and in the intervals of mining, they cultivate corn, vegetables, tobacco, &c. At the mines wages are usually paid by the month on the tonnage of lump coal, weighed after it has been screened. The wages during the last few years has ranged up to 77 cents per ton, which is from 7 to 14 cents per ton less than is paid in Pittsburg and other districts of Pennsylvania, but is rather more than the current average rates at Ohio. Lower rents and cheaper living make the West Virginia scale better than that either of Pennsylvania or Ohio.

According to the report of the United States Geological Survey, the price of coal in West Virginia ranges from 61c. to 11c. per ton at the pit's mouth, the average being about 81c. The prices obtained in Chicago for Kanawha coal ranged from $3·50 to $4·25 for splint, $3·21 to $4·25 for other sorts, and $4·44 to $5·31 for cannel coal.

In many cases the colliers live (as in this country) in houses belonging to the colliery, for which they pay $4 or $5 a month for three or four rooms, with a plot of ground attached. The houses are poor, and the truck system seems to be common, as at almost every colliery there is a store belonging to the employers, at which the men are expected to buy their provisions, clothes, and tools, at prices (according to Mr. Peel) "somewhat in excess of those charged elsewhere for similar goods."

From the Kanawha fields there is a great stretch of water communication by the Ohio and Mississippi, affording something like 16,000 miles of inland water navigation. The navigable channel is being constantly improved and extended by the removal of rocks and other obstructions. On the Kanawha River, for instance, navigation used to be almost completely suspended during summer; but now by the improvements, aided by locks and dams, coal can be shipped (according to the U.S. Engineering Department) on 330 out of the 365 days. This gives very cheap carriage from the mines to many markets. The barges cost little, and are cheaply worked. A coal barge will carry from 400 to 500 tons, and steamers will take in tow 10 or 15 of these barges—indeed, on the Ohio a steamer will sometimes drag after her a fleet of 30, representing a weight of 15,000 tons of coal. The towage rate is very small. To Cincinnati, for instance, a distance of over 260 miles, it is only 25 cents (say 1s.) per ton, and the barge hire another 6d. per ton. The total cost of transport is thus about 1-7th cent per ton per mile. For longer distances the rates are even cheaper. Kanawha coal is sent all the way down the Mississippi to New Orleans (in special barges, which are usually sold there, instead of being towed back empty), a distance of over 1770 miles, for $1¼ per ton, lighterage and towage. This is equal to 1-14th of a cent per ton per mile. Even lower rates are obtained on time contracts by some of the larger coal companies, while those who have their own barges and do their own towing may count a still lower rate of transport.

These are important facts in relation to competition. It is true that coal for this country could not be sent down to New Orleans for shipment, but, nevertheless, New Orleans, or some other equally distant place, may become a coaling port for steamers engaged in the Western trade. Again, this long and cheap system of water carriage must tend to keep down the cost of railway transport, which at present seems relatively high—about 6s. per ton to the seaboard. The most suitable port for export purposes seems to be Norfolk, which is served by the Norfolk and Western Railway, a line which taps the rich region of the Pocahontas coal.

This is the quality which will compete with British coal, and the annual output of it has now risen to 3,000,000 tons. This is the coal which commanders of all ships in the United States navy are ordered to use wherever they can obtain it, and for which the Government have a running contract. This is the coal that the Cramp Company always employ on trial trips. And this is the coal which the *Campania* used when she made one of her record runs last year (5 days 4 hours 55 minutes) from Sandy Hook to Queenstown, and the *Lucania*, when she did the same run in 5 days 2 hours 7 minutes.

It is not to be supposed that these runs were made because Pocahontas coal was used, but it is evident that American coal is as good as British in enabling steamers to develop their best paces. The White Star Line and the German and French lines have also used the same fuel with satisfactory results, and although experiments are being made with other qualities of West Virginian coal, it is believed that the Pocahontas will stand all competitive tests. It is declared by a Newcastle analyst to be "equal to the best Welsh steam coal, and excellent coal for steam-raising purposes."

We now draw attention to the following table of

Exports of Coal from the United States:—

To	1892. Tons.		1893. Tons.
United Kingdom	82,159	.....	69,043
Germany	41,357	.....	43,943
France	28,708	.....	24,309
Europe (other parts)	27,206	.....	26,829
British North America	1,638,765	.....	2,782,579
Mexico	122,448	.....	175,155
Central America	8,328	.....	5,368
Cuba	350,933	.....	365,658
Porto Rico	18,831	.....	16,686
San Domingo	850	.....	4,737
West Indies	124,316	.....	101,012
Brazil	10,080	.....	6,736
U.S. Columbia	34,755	.....	22,911
South America (other countries)	6,225	.....	10,763
Asia and Oceana	1,272	.....	1,346
Other countries	492	.....	1,803
Total	2,497,325	.....	3,658,878

Here it will be seen that last year there was an increase of over a million tons in the exports. No doubt a good deal of that debited to the United Kingdom, Germany, and France was bunker coal, but it comes to the same thing in the general competition. Then the large shipments to Canada, Cuba, and Mexico are certainly indicative of active competition.

Of course, West Virginian coal cannot compete with Cardiff or Scotch coal in point of price on this side of the Atlantic in ordinary times. Freight is always against that. But extraordinary times are only too frequent in the coal trade, and it is not necessary that coal for steamer purposes should be landed here. If the coaling-stations of the world can be supplied as well from West Virginia as from Wales or Tyne, then American competition in coal is an important economic fact.

In conclusion, we may quote the closing words of the special report to Sir Julian Pauncefote—"On the one hand, the almost unlimited resources of the coal fields of the United States, the excellence of the quality of the coal, the possibilities in the system of mining, and greater reductions in the cost of freight; on the other hand, the immense amount of coal consumed within the United Kingdom, the recent increase in the average of value at the pit's mouth, the great losses suffered during the coal crisis," form "considerations which tend in the direction of the establishment of trade relations of such a nature abroad as may result in a great development of the export of coal from the United States."

We commend the subject alike to Coalmasters' Associations and to Coalminers' Federations.

Danish State Railways Coal Contracts.—The Danish State Railways coal contract, says the *Engineer and Iron Trades' Advertiser*, has now been definitely settled, with the result that out of the Scotch tenders only 6900 tons of Slamannan coal have been taken. This quantity is for delivery at the following ports:—Masnedsund, Kallundborg, Fredrikshavn, and Esbjerg, the price varying from 17s. 5d. to 18s. 2d. per ton, delivered into wagons duty paid at these ports. The total quantity of coals for which tenders were asked was 40,000 tons, and for the other ports included in the contracts Welsh coal has been taken. An unusually small quantity has thus been secured by Scotch coalmasters. Generally about 30,000 tons of Slamannan coal are taken at this time, sometimes 35,000 and even as much as 40,000 tons have been contracted for here. Probably the reason for Wales having got the bulk of the order is that their prices have been relatively cheaper than those offered by the Scotch coalmasters.

Coal in Nottinghamshire.—The new Hucknall Colliery Company have entered upon a further development of the coal on the Duke of Portland's Notts estate. An area of 7000 acres has been leased by the company, in which are situated several of the best Nottinghamshire seams. Plant is being put down to raise 3000 tons per day with two shafts. The coal lies at a depth of nearly 500 yards,

THE DURATION OF GOLD MINING IN THE SOUTH AFRICAN REPUBLIC.

BERGRATH SCHMEISSER'S REPORT.

THE following is Bergrath Schmeisser's report on the duration of gold mining in the South African Republic of Transvaal, as published in the Berlin *Deutschen Reichs-Anzeiger*, and the *Kæniglich Preussischen Staats-Anzeiger*, translated by Mr. Thomas Rickard.

My observations on the probable duration of the gold, mining made during my four months' stay in the South African Republic of Transvaal, may be stated briefly as follows:—The manner in which the gold occurs differs greatly; it is found in lodes, in beds, in the "laterit," and in the alluvium. The lodes are nearly always in steep tilted and highly metamorphosed schists, quartzites, and sandstones of Silurian epoch, and are known as Swazieland beds. The auriferous beds belong to the Cape formation, consisting of sandstones, conglomerates, schists, and diabase, probably of Devonian Carboniferous age. The Cape formation, which has not undergone the sharp folding of the Swazie formation, overlies the latter, and in places where they meet they are discordant. In its turn the Cape formation is, in the same manner, covered by the nearly horizontal Karroo formation, composed of alternating beds of very brittle sandstones and clayslates with coal seams.

The "laterit" gold occurrences are found in the Cape beds, the alluvial gold in the Swazie and Cape beds. Geographically, the gold finds are distributed over ten gold fields, which, in respect of their gold yield for the year 1892, stand related to each other as follows:—

	Ounces.
Witwatersrand Gold Field	1,210,869
De Kaap Gold Field	63,125
Lydenburg Gold Field	24,092
Klein Letaba Gold Field	14,694
Klerksdorp Gold Field	8,968
Malmani Gold Field	2,061
Marabastadt Gold Field	1,113
Houtboschberg Gold Field	373
Vryheid Gold Field	81
Silati Gold Field	18
Total	1,325,394

The lode occurrences are in the gold fields of De Kaap, Klein Letaba, Malmani, Marabastadt, Houtboschberg, and Silati.

The "laterit" occurrences are found in Lydenburg and the De Kaap Gold Fields, while the alluvial deposits (alluvial gold ablagerungen) are found in nearly all the gold fields, though they are only of very subordinate importance.

As is already evident from its superior output, the Witwatersrand gold field is of vastly preponderating importance. Moreover, this is the only field which, on account of its geographical extent, and the geognostic occurrence of its gold beds, as also on account of the actual mining developments, is susceptible of being made to serve as a basis on which to found a reliable conclusion respecting its duration.

The Rand must, therefore, first be taken into consideration, and, after it, the other gold fields, with a statement of the reasons why these are not, for the present, susceptible of being submitted to a similar computation.

About 50 kilometres south from Pretoria lies an east-west range of hills, the Witwatersrand, forming the divide between the basins of the Orange and the Limpopo, the Atlantic and the Indian Oceans. From this range there extends towards the south a wide trough of east-west strike; this trough is formed of numerous conglomerate beds, alternating with beds of sandstone, the dip of which on the north edge is very steep, but flattens out as it extends towards the middle. The gold is contained in the conglomerate beds.

There are about eight groups of beds, which, beginning at the north edge of the trough, may be enumerated as follows:—Du Preez Reef series, Main Reef series, Livingstone Reef series, Bird Reef series, Kimberley Reef series, Klippoortje Reef series, Elsburg Reef series, Black Reef series. Each group consists of three to six beds; the Elsburg reef series contains as many as 30 separate conglomerate beds. Hitherto the main reef series is almost the only one that has undergone exploration. This group consists of the north reef, the main reef, the main reef leader, the middle reef, the south reef, and the south reef leader.

These particular reefs do not, however, present themselves in all the mines. Often a bed divides into two, or two beds unite in one. The main reef group is wrought for a distance of 80 kilometres uninterruptedly, or rather with only short intervals.

Eastwards the beds belonging to this series are seen extending in that direction, under the beds of the Karroo formation. To the west they trend towards Krugersdorf, with a short bend towards the south, and there disappear. They afterwards become visible for considerable stretches on the farms Waterval and Randfontein, in the Potchefstroom beds.

The south edge of the trough has been proved by the Nigel Reef Mine, near Heidelberg, as also by the mine developments of several other companies. There are several north dipping reefs on which mining is carried on with good profits.

A larger number of conglomerate beds having a south dip are met with at Parys and Vredefort, in the Orange Free State; this is on the northern edge of a granite upheaval. Whether the conglomerate beds discovered on the north edge of the trough, correspond with these and with those in the mine developments at Heidelberg, cannot be stated. During the journey across the trough from Johannesburg to Parys and Vredefort, I noticed these beds at several points, notably on the farm Elandslaagte, a place where there are about 30 more or less powerful beds, which cross the Vaal River and trend away into the Free State. Panning tests made on the spot gave decided proof of the existence of gold. To the east as well as to the west of the granite upheaval, the beds disappear under the Karroo formation.

During my stay in South Africa several companies were endeavouring to prove the position and character of the beds, partly by diamond boring, with a view to the discovery of remunerative ground warranting the purchase of the farms. Whether or not these trials were successful, I do not know as yet. From an ideal section, projected to scale, of the works on the north and south edges of the trough, showing the dip of stratification observable on the surface between Johannesburg and Parys, it becomes evident that in spite of the flat saddle in the midst of the basin, the bottoms on either side of the saddle, lie at least at a depth of 6 to 7 kilometres (6557½ to 7650½ feet). No extensive mining has hitherto been done except on the north wing of the trough. The most advanced works are in the farms near Johannesburg, namely, Elandsfontein, Doornfontein, Turffont in and Langlaagte.

The deepest shaft is on the Village Main Reef Gold Mine, which strikes the bed at 156 metres. The deepest bore-hole, however, is that in the Victoria Gold Mine to the south of Simmer and Jack, where the main reef is struck at 750 metres. Mine developments have shown a gradually flattening out of the beds in depth. The dip in the deepest bore-hole is now only 20 degrees.

The lodes themselves are stratified accumulations of quartzy pebbles from the size of a pin's head to that of a hen's egg. In the hanging wall of the beds, particularly in the Kimberley Reef series, the pebbles attain the size of a child's head, and they are cemented by a blueish grey siliceous matter. The thickness of the beds varies from a mere thread to a metre; one of the beds attains a thickness even of 30 metres.

The gold, though found almost exclusively in the cementing matter, has in some cases been found in pebbles. In the latter case it would appear that its presence there is due to minute fractures or joints traversing the quartz. The gold contents range from a few grammes to over 100 grammes per ton of conglomerate. By experience its quantity is in inverted ratio to the thickness of the bed, rising with a diminution in thickness and falling with an increase. The general result of tests made of the section of the bed has been to indicate a very unequal distribution of gold, with the exception, however, that the gold increases in the isolated leaders of large pebbles, occurring principally along the footwall of the bed.

The average gold contents of a reef remains unchanged by depth, notwithstanding that a certain enrichment took place at the surface due to the decomposition of the out-crops. It is particularly important to bring to notice, apart from the local variations, which do not, however, affect the rule, that no observation has been made, which renders it possible to establish either increase or decrease of the average gold contents in depth.

In the fresh undecomposed conglomerate the gold is often intimately mixed with pyrites, but even when it is found in the rock, as the so-called free gold, it is so finely divided that it is, as a rule, invisible to the naked eye. The change from the altered red to the unaltered bluish grey stone is gradual, and the line is at various depths in different mines, mostly at 30 to 40 metres deep.

The stratification is much disturbed, numberless rocks, mostly diorite dykes of varying thickness, swelling sometimes to 30 metres, intersect it, producing faultings and dislocations.

In the year 1892, 69 mines were at work in the Witwatersrand trough, with an aggregate annual extraction of 1,795,630 tons of conglomerate. At three of these mines the extraction reached over 100,000 tons each; at six of them 50,000 to 100,000 tons; at 41 from 10,000 to 50,000 tons; at 19 under 10,000 tons. The figures for 1893 are not yet to be had, but the extraction will be at least 2,000,000 tons.

The ore from the far reaching underground works is conveyed to the stamps, where a part of the free gold is won by amalgamation, and the auriferous pyrites or concentrates, obtained mostly by Frue vanners, is subjected to the Plattner chlorination treatment; the tailings are treated by the McArthur-Forrest cyanide process. The yield of gold in the different mines naturally varies according to the particular process in use. A well conducted works extracts 55 to 60 per cent. by amalgamation; the remainder is contained in the tailings; the loss does not exceed five per cent.

Coal is abundant. The Karroo formation, which partly overlies the east and south wing of the basin, contains rich beds of steam coal, which are already in exploitation in several places. At the Brakpan Mine, at Boksburg, a bed is being worked which is 6 metres in thickness, and the output of this mine from 1st October, 1892, to 30th September, 1893, was 202,745 tons. This coal is delivered to the mines by rail

Smiths' coal is found in the Middelburg district in a powerful horizontal formation; and can be worked by drifts run in from the valley sides; at present, however, this coal has to be conveyed to the mines by ox teams.

According to the statistics collected by the Chamber of Mines in 1893, the number of workmen at Witwatersrand was stated to be, in round numbers, 3200 whites and 21,000 coloured people. An exact statement could not, unfortunately, be obtained, because some of the companies refused to make returns. The pay of the whites runs from 16s. to 18s. per day, and that of the coloured men 2s. to 3s. per day. The shift is 8 to 12 hours.

The mining in general is now well conducted—the financial condition after the period of inflation (*schwindelperiode*) is decidedly improving.

The gold extraction amounted in

1888	to	230,640	ounces.
1889	„	382,364	„
1890	„	492,492	„
1891	„	729,223	„
1892	„	1,210,574	„
1893	„	1,480,000	„
		4,525,293	

The value of the 1892 output was £4,297,610, and of 1893 (computed) £5,180,000.

The average yield of the conglomerate in 1892 was stated roundly at 13 dwts. and in 1893 at 14 dwts. per ton, while the averages of the preceding years are given by Mr. E. Suess, in his "Future of Silver," page 46:—

1888	22·65 dwts.	1890	13·64 dwts.
1889	19·60 dwts.	1891	11·23 dwts.

The gold is always associated, more or less, with baser metals, so that prior to its being delivered for use in the arts and for coinage, it undergoes refining; therefore, the gold mines realised not more than 70s. per ounce.

The cost of production varies very much; it averages 27s. per ton of conglomerate. In the case of mines worked under unfavourable conditions, such as with a thin reef, disturbed by faults, the cost amounts to 40s., and even more, while under more favourable conditions, that is, with thick reefs, flatter dip and but little faulting, it drops to 20s. a ton.

With an average of 27s. as the cost and 70s. as the value of an ounce of mill gold, 7·5 dwts. cover the cost per ton. A yield of 7·5 dwts. is, therefore, considered as in general the lowest limit at which a mine can be worked; a few mines working under specially favourable conditions are able, with 5 dwts. to pay their costs, and make a slight profit

Here, it must be observed, that hitherto most of the mines stope, both the decomposed and the undecomposed conglomerate; some even are only just now beginning to treat the undecomposed.

With the diminution of the altered and the increase of the unaltered conglomerate, there will unavoidably be a certain increase of cost, because of the greater difficulty in the preparatory work and in the stoping, as also in the milling and amalgamation. This increase is estimated at 4s. to 5s. per ton On the other hand, it may be expected that a diminution of cost will be brought about through the over-improving working arrangement, by the gradual diminution of wages, the cheaper cost of transport for supplies, due to the railway from Delagoa Bay to Pretoria, and by the diminution of the cost price of particular articles—such, for example, as dynamite, which have been artificially rendered dear.

The above mentioned minimum gold contents, compatible with profitable mining, regulates the selection of reefs for exploitation. As a rule, only those reefs are selected whose gold exceeds these limits. In this way only two reefs are worked in the mines on the north wing of the Rand (the south reef and the south reef leader, middle reef or the main reef leader). The main reef and the north reef have hitherto seldom proved paying.

It would seem from the foregoing that an estimate of the entire gold wealth of the Rand is impossible. The gold field is not yet sufficiently opened up to admit of this. It is not yet settled what portion of the field, apart from the north edge of the trough, is sufficiently rich to be remuneratively worked.

(To be continued.)

THE EDITOR'S LETTER BOX.

*** We wish it to be understood that we do not hold ourselves responsible for, and do not necessarily endorse, the opinions of correspondents. All communications must be accompanied by the names and addresses of the senders, though these need not necessarily be published.*

THE CITY AND SUBURBAN GOLD MINING COMPANY, LIMITED.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—As a shareholder in this company, I have just now read with interest the two paragraphs you last Saturday devoted to it. You speak, of course, favourably of this excellent concern; but, as it seems to me, you greatly under estimate the dividends we may reasonably expect to receive, will you kindly allow me, as one of your constant readers, to state my reasons for expecting a very large increase in the annual profits after the new stamps and augmented cyanide works are hard at work.

One of your contemporaries, the *Statist*, last autumn had a remarkable series of articles on the chief Randt mines. The one which dealt with the City and Suburban calculated that the dividends would rise to 150 or 200 per cent. Surely this is no exaggerated estimate. At present the monthly crushing is about 4000 tons. The Chairman, in his recent speech, stated that after June the monthly crushing would be 15,000 tons. As some of the reef to be dealt with will be poorer stuff, the Chairman was careful to warn us that 15,000 tons would not produce three or four times as much as the present 4000 monthly dealt with; but surely it is a moderate calculation to suppose that the additional 11,000 tons will produce as much gold as the 4000 now dealt with. As this gives dividends of 100 per cent., I confidently expect the 15,000 tons will yield 200 per cent. And, besides this, the increased cyanide works will aid profits, and in the near future the landed estate of the company, reaching to the very centre of Johannesburg, must become enormously valuable.

A well-known German expert has compared this company with the Robinson, and has published his opinion that these shares will ere long be worth £25. I do not want to persuade anyone to buy City and Suburbans without making very full enquiry. This is what I have done myself. I am perfectly satisfied with the investment I have made in the company. I mean permanently to "stick to it." At the last meeting of the Consolidated Gold Fields Company, its shrewd managing director, Mr. C. D. Rudd, declared his belief that before next October "Cities" would be £15. I believe that prophecy will be fulfilled, and before two years are over I expect that the prediction of the German sage will have come true, too, and that our shares will be between £20 and £30. Our outcrop claims are protected by a mile to the south belonging to the company, and but few people in England yet realise how enormous may become the value of our land bordering on the busy centre of fast growing Johannesburg.—Faithfully yours, AFRICAN.

March 28, 1894.

CORNISH MINING AND ITS UNWROUGHT GROUND.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—Industry finds an ever-widening field, and business in general is seeking new fields in branches which have for a long time been neglected by capitalists and by enterprising men. The recent advance in the price of tin affords opportunities for the successful development of the large area of unwrought mining ground throughout the West of England. For the last 20 years or more the county has been barren of large "finds," or shallow deposits of mineral. The enterprising spirit of our forefathers towards home mining seems to have died with them, but now and then we hear of the outcrop of a kindly lode being found which, if followed up by a small outlay for machinery, would prove a boon to the neighbourhood where it is situated, and to its fortunate finders.

In the neighbourhood of St. Columb there appears (from report) to be one of such outcrops recently found producing tin within a few fathoms from surface. This, by-the-bye, is one of the many neglected mining districts of the county. It may not be out of place to mention the circumstance of a large find of mineral in this district many years ago:—"The lode was discovered, and an adit level extended (very shallow) many fathoms on its course. Some ore was raised, and the question agitated whether the appearances in different places warranted the erection of machinery to sink below the adit. Some not very well versed in the science (we have too many of the same sort now) gave up their shares, while others of greater experience and more penetrating views increased their own by accepting those which were given up, and prosecuted the working. The levels very little beneath soon exposed vast quantities of valuable ore. The dividends declared on each £50 share (100 shares) amounted to £2776 each share in the short period of 13 years, the total amount of profit in that time being £280,000 odd." What are known as the permanently productive mines of the county invariably made such "chimneys" of mineral close up to the surface, leading to large accumulations of ore down to a depth varying from 150 to 250 fathoms deep, then meeting with a transition rock the lodes become impoverished (still holding their size), this being the early history of Dolcoath and other now deep mines in the Camborne district. It is also the history of the large producing mines throughout the West of England. The success attending the penetration of this rock can, to some extent, be calculated by the magnitude and richness of the ore body above it; indeed, the evidence, in fact, the proof, that the lodes have already given off unusually great productiveness, justifies the realisation of such opinion being anticipated with the greatest confidence that at increased depths our once rich copper lodes will prove abundantly productive of tin ore. The cause of mining capital being withdrawn from the county does not arise from any failure in the production, but from the lack of enterprise in prospecting for new discoveries. An interesting fact within the last few days is an illustration of what happens by perseverance. Some ten days ago shares in a mine were sold as low as 3d. per share, to-day they are £2 5s. each, on improved prospects and enhanced price of

tin metal; and if anything can be said in favour of the prospective merits of some few others known to the writer, the case alluded to is the commencement of another era of successful Cornish mining.—Yours obediently, Chas. Bawden.

Poldice House, St. Day, Scorrier, Cornwall.

GOLD MINING IN BRITISH GUIANA.

TO THE EDITOR OF "THE MINING JOURNAL."

Dear Sir,—In addition to your article on this subject in last Saturday's issue of *The Mining Journal*, the following information will probably be of interest to those who are making numerous enquiries regarding this industry. Very little was done in gold mining until 1880, when an ordinance was passed by the Government limiting the concessions granted to private individuals or companies to 500 acres. The gold returns increased to such an extent during the next seven years that a few ordinance was promulgated, which was amended and supplemented by a subsequent enactment in 1889, and the following statistics show that the return of 810¾ ounces in 1885 increased in nine years to 142,633. The royalty is 90 cents per unce.

Years.	Ounces.
1885	810¾
1886	5,922
1887	11,280
1888	14,135
1889	27,777
1890	59,643
1891	95,527
1892	123 833¾
1893	142,633

The area of the country is 109,000 square miles; the surface of a large portion is gneiss; there is also sandstone interbedded with layers of greenstone. Schist of different kinds exists, and granite in the interior, and there is timber in abundance, and although this country is producing gold in such increasing quantities, it is seldom we see allusion to it in the newspapers, and when compared to the return of the Witwatersrand mines will probably induce more attention being paid to it in future.

In 1887 the Witwatersrand return was 23,155 ounces, while British Guiana was 11,280, about half the amount; and last year Witwatersrand produced 1,478,473 ounces, and British Guiana 142,633, equal to about 1-10th. In other words, the Witwatersrand district of South Africa produced over 41 tons of gold in 1893, and British Guiana produced over 4 tons.—Yours truly, J. H. Hampton.

26th March, 1894.

REVIEWS.

AN AMERICAN CONTRIBUTION TO SCIENTIFIC LITERATURE.

Annual Report of the Board of Regents of the Smithsonian Institution, showing the Operations, Expenditure, and Condition of the Institution to July, 1891. (Washington: Government Printing Office, 1893.)

Another of the sober-looking volumes which issue at intervals from the Government Printing Office, at Washington, to delight those among civilised men who are interested in watching the growth of human knowledge under the application of scientific methods, has at length made its appearance, and will receive as hearty a welcome at the hands of our learned societies as was accorded to earlier volumes in the same series. The selection of papers to accompany and serve as an antidote to the hard and formal "Journal of Proceedings" and "Report of the Executive Committee" is marked by the same deep colour of nationality, and the same breadth of variety as always characterise the publication.

The utmost limit of expansion will seem to have been reached by a scientific review which in one paper describes the various modes of keeping time known to the Chinese, in a second summarises the progress made in anthropology up to 1891, and which seeks, in a third, to prove the universality of the law of evolution by giving to it a commercial application. In this wide embrace of subjects lies one of the greatest merits attaching to the work. It is not a book for one cast of mind, but for all. The writings, too, are in a large measure free from that fierce, intemperate style of attack and defence which disgraces many a modern scientist and philosopher, and turns what should be a coldly intellectual process of thought into something quite as undignified, and almost as pernicious, as a party brawl. We have not, of course, read every paragraph of the 700 pages of closely-written matter before us, but hitherto we have met with but one observation which might without undue sensitiveness be ruled out of court, and if Mr. Ruskin were to cry out upon the judgment which has called him a false prophet, Dr. du Bois Reymond might easily reply with a *tu quoque*, which the author of the rather too celebrated denunciation Grote might find it difficult to rebut. This generally equable temper of writing does honour to a country which always associates itself in the English mind with a freedom of speech sometimes not easily distinguishable from the worst sort of license. At a time when some few men, not usually deemed visionary, are contemplating the possibility of an American-English Union, it is pleasing to observe and test a tie, stronger than any union of Governments, which binds the intellect of the parent country to the mind of the somewhat rebellious offspring. Whatever ostentatious assumption of independence and even of antagonism the American may put on, none can glance at his bookcase without realising that, at least in the sphere of serious thought, his Mecca lies by the Thames and not by the Hudson. The enormous awakening of interest in the astronomical science—at least in its more general aspects—which has taken place within the last decade or so justifies the belief that the cluster of papers at the commencement of what is humorously termed the appendix will be those most widely read. Spectroscopy is eminently the science of to-day, and the title of the opening article is calculated to excite an interested attention, more especially as the name appearing beneath it is that of Mr. W. Huggins, F.R.S. The subject, however, being so progressive and so perpetually in a state of flux, it is a little disappointing to find a footnote identifying the article with a presidential address delivered before the British Association at Cardiff in August, 1891. Students of Schellen's great work, with Captain Abney's addenda, will find that there is not much that is new to be learned here. The old difficulty of identifying the lines due to the terrestrial atmosphere in the solar spectrum occurs again, and having dealt with some of the more burdensome obstacles to be overcome in forming a spectroscopic estimate of the nature of luminous heavenly bodies whose spectra differ from that of the sun, the writer proceeds to speak of a stellar evolution, the unmistakeable indication of which rests with the continuity running throughout nearly the whole series of groups into which the spectra naturally and easily fall, "passing from the bluish-white stars like Sirius, through stars more or less solar in character," to stars with banded spectra, which divide themselves into two apparently independent groups, according as the stronger edge of the bands is towards the red or the blue." Mr. Huggins could hardly be expected to conclude without some reference to the motions of advance and recession in the heavenly bodies; but he does not say more than suffices to show that in this, as in other ways, the spectroscope is achieving feats, which in a less materialistic age would be ascribed to a miraculous agency. This reproduction of a presidential address is followed by a reprint of two articles, written by Agnes M. Clerke, in a semi-scientific, semi-imaginative and wholly interesting manner which reminds one, despite some missing points of similarity, of the Parisian prototype of Sir Robert Ball, the author of the *Rêves Etoilées*. For preference we should select the description of "A Southern Observatory," where the graces of the woman are not wholly subordinated to the mind of the scientist. Her vivid description of that scientific anomaly—an astronomical observatory without a department of spectroscopy—to have been seen some years ago at the Cape, will supply admirably a blank in astronomical literature. But here again we must remember that some years have elapsed since our authoress wrote the last paragraphs of this paper, and the blank is one which may easily have been supplied during the interval.

"Some Applications of Physics and Mathematics to Geology" is the title of a paper by Mr. C. Chree, M.A., in the first section of which the author deals with the comparative elasticity of various bodies, and passes thence to apply his conclusions in some interesting speculations concerning the origin of the present shape of the earth and the state of its interior. We can heartily sympathise with the writer in his exclamations against excessive theorising. It is hardly too much to say that the attainment of truth cannot fail to be unnecessarily retarded by the alacrity with which *savants* are accustomed to form theories of their own, and to air them when formed. With an interval of half a dozen minor contributions, including an account of the earlier exploration and the gradual attainment of more certain information respecting the Gulf Stream, there follows a budget of papers translated from the German, which serves well to remind us that in science, as in philosophy and metaphysics, the cold, phlegmatic inhabitants of the German Empire have thought and written to so excellent a purpose as to enable them reasonably to dispute for absolute pre-eminency. Among them is a charming fragment of autobiography of Justus von Liebig, translated by Professor J. Campbell Brown, in which can clearly be traced the formation of the habits of mind which distinguished the great chemist. We have not space, though we have the inclination, to particularise the remaining articles in the volume before us. Enough has already been said to show with what pleasure and profit it will be received by the more thoughtful among the community. For ourselves, we shall look forward with gratification to the appearance of the next report in the hope that it may sustain a favourable comparison with the one before us.

METALLURGY.

Handbuch der Metallhüttenkunde. By Dr. Carl Schnabel. (Published by Julius Springer, Berlin, 1894.)

This is the first volume of a manual of special metallurgy from the pen of the well known professor of metallurgy and chemical technology at the Clausthal Mining Academy. It comprises the metallurgy of the more common metals—copper, lead, silver, and gold—that of the others being promised in a later volume. The knowledge gained by the practical superintendence of works, in nine years of teaching at Clausthal, and during his late travels of 1891 and 1892 in Australia and America, have peculiarly fitted Bergrath Schnabel for the work he has taken in hand, in which he endeavours to bring the literature of metallurgy up to date in a convenient form for students of that subject. The volume just published consists of 914 pages, and is well illustrated with 571 figures. Lord Lytton writes:—"In science read by preference, the newest books; in literature, the oldest." To no science does this apply more than to metallurgy; the immense strides that have been made in this direction of late years, the application of chemical knowledge, and improved mechanical devices, soon leaves the older text books behind.

The general scheme followed in this book is practically the same for each metal.

After enumerating the physical and chemical characteristics of the metal itself, its important chemical combinations and reactions are noted, and these are followed by detailed accounts of the dry and wet methods of extraction, and processes for refining the metal so far as the limits of the work allows. A book of this sort cannot be expected to enter into minutiæ, such as one who wishes to thoroughly investigate a process and know all *pro et con.* could desire. Such information must be gained by reading original articles in various technical journals, published in different languages, the cream of which is epitomised in handbooks. A bibliography added to this volume, or fuller references given at the foot of the pages, would have greatly enhanced the value of the work. Students would also understand the various reactions much better had the author been more liberal with his equations.

The book under review is not filled up with a quantity of historical matter, which, however interesting in itself, would be rather out of place, considering the mass of important matter there is to be recounted. Modern American practice forms a prominent feature in the work, and well-selected examples of analysis of slags, &c., are given. Pyritic smelting, in which the sulphur is used as fuel, is disposed of in a very few words; but the converter process for blowing up copper matter is more fully treated. There is an interesting chapter of 25 pages on winning copper by electro-metallurgical means; the subject is divided into:—

(*a*) Extracting copper from ore by Siemens and Halske's and Höpfner's methods, both of which require further tests to prove their economic value. (*b*) The extraction of copper from matte by the Marchese process. (*c*) The extraction of copper from alloys—*e.g.*, auriferous and argentiferous copper. The different metallurgical processes are enumerated for each metal, and the circumstances that decide which one shall be employed in any particular case are given.

The water jacket furnaces introduced from the United States play an important part in the treatment of lead ores, and are extensively used in America, Australia, and Europe. Silver and gold have not been behindhand of late years; the advantages of hydro-metallurgy applied to certain ores of these metals have more especially pushed themselves to the fore, such as the Russel process for the former, and the MacArthur-Forrest process for the latter. Among the wet processes for the extraction of silver, we are given accounts of Augustin's, Patera's, Kiss,' Russel's and Ziervogel's methods. When writing of the zinc method of desilverising lead, we are treated to an account of Schnabel's process for removing the zinc oxide from the oxidised portion by means of ammonium carbonate, as originally used at Lautenthal.

Since the fall in the price of silver attention has been drawn more towards gold, so we naturally read with interest what Dr. Schnabel has to say on the subject. In the matter of pan-amalgamation, we confess we are disappointed; true, there are vast numbers of pans of different types for him to choose from, and without practical experience of them it is not always easy to select the best, but we think he might have made a better choice. We miss several of our old Australian and New Zealand friends that have done good service. Barrel amalgamation is passed over in a few lines, although it is used at many mills for treating concentrates and for cleaning up. Much useful information will be found collected under the heading of Plattner's process. Throughout the work one can see that the author has been at pains to procure suitable material which he has arranged and worded in a palatable form, so that its perusal is more a pleasure than a drudgery. To facilitate matters, the book is provided with a good table of contents and index, while the print is of such a type and so spaced as not to try the eyes of the reader.

LEGAL LITERATURE.

The Shareholders', Directors', and Voluntary Liquidators' Legal Companion. By Francis B. Palmer. (London: Stevens and Sons, Limited.) Fourteenth edition.

Mr. Palmer's more pretentious books are so well known that it is not surprising that this little half-crown handbook upon company practice has already reached its 14th edition. That the demand for such a work must be great is made apparent by a recent parliamentary return showing that the paid-up capital of companies under the Act of 1862, and now carrying on business, amounted to £1,000,000,000 and upwards in April, 1892, and that companies are formed under the Act at the rate of about 2500 per annum. In addition to this there must be invested in debentures and debenture stock of such companies at least £200,000,000. This demand, moreover, is continually increasing, as our English Companies' Act of 1862 is being adopted in almost identical terms in India and our colonies. It is, therefore, obvious that the number of persons connected with such companies must be very large, and for such persons this book is invaluable. The first hundred pages deal in a most exhaustive and detailed manner with the formation of companies and the duties of their officers and should be perused by everyone who has to advise with regard to the issue of a prospectus. Under the heading of "Prospectuses," Mr. Palmer makes the following observation, intended for gentlemen aspiring to become directors:—"No prudent man will take part in the issue of a prospectus unless he is satisfied that the prospectus complies with the law, and that he will be able to defend himself in the event of proceedings being taken against him." Then follows the Directors' Liability Act, 1890, which has had the effect of modifying the law so far as it affords a remedy to those who are induced by misrepresentation to subscribe for shares, debentures, or debenture stock. It will be remembered that under the old law a man who was induced to subscribe by mis-statement had to bring an action of deceit, and could not recover damages for the loss sustained by him, unless the directors or others made the statement knowing it to be false, or recklessly, or not believing it to be true. Under the new Act it is for them to prove not only that they believed the statements to be true, but that they had reasonable grounds for that belief. Mr. Palmer, in a clear manner, discusses many points of difficulty which arise under the Act, and no one can read his commentories on this Act without being impressed with the stringent character of its provisions. It would seem that in his view it is expedient for any director or other person, who might be responsible for any untrue statements, to make and keep a written record of the grounds of his belief of the various statements, and for his belief in the competency of the expert—possibly this is what every prudent man would do, but it might not occur to such a man that it must be made, in order to be of use to him should occasion arise, at the time or so soon afterwards, that it is likely the judge will consider the transaction to have been fresh in his memory. Many similar useful hints abound throughout this excellent little book. An appendix, with many valuable forms and a sufficiently good index, complete a book which should be found in the office of every company.

BOOK AND NEWSPAPER ILLUSTRATION.

Cantor Lectures on the Art of Book and Newspaper Illustration. By Henry Blackburn. (London: William Trounce, 10, Gough-square, Fleet-street, E.C.)

The publication in pamphlet form of the Cantor Lectures on the Art of Book and Newspaper Illustration, by Henry Blackburn, is fully justified by the abundance of matter contained in the lectures themselves, all the import of which might not be realised upon a single hearing. Mr. Blackburn divides his subject under three heads:—"The Illustrator, the Engraver, and the Author," and upon each he has something to say well worth the attention not only of artists, but of the reading public generally. "The Book of the Future" is one of the most interesting passages in the lectures. Most men will agree with Mr. Blackburn that "there is no reason why the texture of a man's coat should look like straw, or the background to a figure have the appearance of fire-works," and such grotesque productions will not be tolerated in the book of the future.

To the lay mind it would hardly appear, from an amused and interested examination of the illustrations appearing in the more ephemeral literature, that the art of supplying them had enough canons of criticism and different schools to support the dignity of one of the finer of the fine arts. That such is the case, however, Mr. Blackburn makes very clear. It is the student whom the lecturer more particularly addresses, and to whom the apt remarks, the pungent and suggestive comments, the practical hints abounding in the text will be an education, or, to speak with more exactitude, will indicate the lines upon which such an education should proceed. Chief among these is the exhortation, made rather by example than precept, that the young student should study the classics, should incorporate, as it were, into his modes of thought and imagination the spirit of all that has been left to him by such men as Du Maurier, H. S. Marks, and Charles Keene. Should the student learn to grasp with intelligence the spirit lying within the works of these men, and should he learn to read them with a mind at once critical and appreciative, this little pamphlet, by aiding in the attainment of such a result, will have performed exceedingly useful work.

PUBLICATIONS RECEIVED.

In sending books for review publishers should state their price.

"Our Railways:" their Origin, Development, Incident, and Romance. By John Pendleton. Two volumes. (London: Cassell and Company, Limited). Price, 24s.

"Deutsch-Spanisch-Französisch-Englisches Wörterbuch de Bergund-Huttenkunde sowie deren Hülfswissenschaften." Von Max Venator, Bergwerksdirector in Rositz bei Altenburg. (Leipzig, Verlag Von A. Twietmeyer.)

"Surveying and Surveying Instruments." By G. A. T. Middleton. (London: Whittaker and Co., 2, White Hart Street, Paternoster Square, E.C.)

BENDIGO GOLD FIELD.

By H R. WILLIAMS, M.P., Ex-Minister of Mines, Victoria.

IT will interest you and your numerous readers in various parts of the world to learn that a series of articles, which appeared in your Journal as far back as 1881 and 1884, entitled, "The Origin of Gold and Quartz Reef," and "The Golden Quartz Reefs of Australia,' by William Nicholas, F.G.S., Consulting Mining Engineer, Lecturer on Mining, Melbourne University, is attracting extraordinary attention at this present time.

The reason of this is that there has recently been issued from our local mining department a special report on the Bendigo gold field by E. J. Dunn, F.G.S., who, in his introductory letter, reflects very severely on the want of understanding or comprehension of the chief features connected with the quartz reefs or lodes of this Bendigo gold field, by the Bendigo gold miners, mining managers, and others interested in mining.

It has also been observed that in Mr. Dunn's report appear many statements that were previously stated by Mr. Nicholas in your Journal, possibly in different language, but to a similar purport, and which I propose directing attention to, with your permission, in your columns.

In the *Mining Journal* of August 2, 1884, you published a private letter to yourself from Mr. Nicholas, in which the latter says:—"Sir,—In giving the information about our quartz reefs, I do so in the hope that other men (gold miners) will also be enlisted to give their experience of auriferous veins through your widely-circulated Journal. By thus aiding one another with our practical knowledge, gathered together from different quarters of the globe, we shall quickly collect a vast amount of useful information for the guidance of each other in our respective countries. I hope if any persons take up this subject in the same spirit, &c." . . . .

The first 10 articles published by Mr. Nicholas—counting the above letter as one—solely relate to the Bendigo gold field, and to these shall I specially refer in my subsequent remarks, which I hope will aid a little in the accomplishment of Mr. Nicholas' object, viz.: the dissemination amongst mining men of useful mining information for the guidance of their operations.

Useful information may be conveyed in many ways, sometimes by a collection of dry-as-dust facts, at others by interesting descriptions, and again by a comparison of men's ideas and experiences; and to some extent I propose to adopt the latter method.

Now, Sir, I wish to offer a few remarks in defence of the Bendigo mining men—of whom I am proud to say I am one (and my father before me another). In his introductory letter to his report above referred to Mr. Dunn says:—

3rd par. "Extensions of the known lines of reefs for any considerable distance ahead of the workings hitherto have been impossible, except in an *empirical* manner."

7th par. "The *grand* work already performed by the miners in so thoroughly opening up the strata to such great depths supplies the means by which future operations may be greatly facilitated, and work vastly economised. The work already performed also enables a sound forecast to be formulated as to the future of the field."

Empirical or not, let me tell you, Sir, that during the past 40 years we have sunk over a score shafts from 2000 to very nearly 3000 feet in depth (see his longitudinal section of saddle reef, and centre country on one reef for 6500 feet in length, in which there are 13 shafts sunk from 2000 feet to 2850 feet). And his "anticlinal axial line" plan (really a plan showing the course of the quartz reefs or lodes) he says, page 18, par 9, "shows over 100 miles in length of anticlinals, along which saddle reefs occur at various depths." In referring to such work, and done in so short a space of time, I think, to say the very least of it, the choice of such a word as "empirical" comes with ill-grace from a new arrival amongst us.

Judge us by our work performed, and I don't think our forefathers in Britain need be ashamed of their sons in Bendigo—even though their works were done "empirically"? which I deny, in the sense of quackery or charlatanery; or want of professional learning or knowledge. I grant there has been a lot of practical experiment and personal observation. In no mining field in the world do mining managers and shareholders so frequently visit each other's mines — interchanging inspections underground in the numerous mines and ideas, engendered by such inspections. We have had the Bendigo School of Mines established in our midst with such men as Messrs. William Nicholas, F.G.S., Lon., of the University of Melbourne; E. F. Pittman, Government Geologist of New South Wales; R. Brough Smyth, F.G.S.; G. Thureau, F.G.S., Lon., &c., &c., &c., as Lecturers on Geology as applied to mining, geology and mineralogy. And of the former gentleman's lectures I shall probably send you a few quotations from reports that regularly appeared in our three Bendigo newspapers on the day following their delivery.

I will now, Sir, give you a few interesting comparisons of authorities, and possibly Mr. Dunn on Mr. Dunn in this particular special report.

Denudation.

Mr. D., page 7, par. 4:—"The unceasing influences that tend to wear down the hills and to fill up the valleys have been exerted over this region throughout an immense period of time. That the denudation has been very great since the Silurian rocks were bent and contorted is certain, but no *definite standard* exists by which the actual amount can be gauged." . . "Although the pre-tertiary denudation of the Silurian rocks cannot be even roughly estimated." . . Most of this denudation (200 to 300 feet) may be credited to a Post Pliocene period. . .

Mr. N., *Mining Journal*, Article I., July 19, 1884, par. 8. . . "Not only, however, did they (outcrops of reefs) indicate their continuations downwards, but also what had existed upwards probably for thousands of feet. And to the denudation or destruction by nature's operations of those vast upper structures by natural sluicing operations was due the concentration of gold in the alluvial deposits. . ." See Longitudinal Section, Article No. II., and Article IV., *Mining Journal*, Fig. No. 4, Transverse Section, dotted lines in each section carried above surface lines.

The cardinal points do not appear to be fully grasped by Mr. Dunn respecting denudation, when he can only fix a minimum of 200-300 feet. For, although only a Bendigo miner, it appeals to my common sense that he had a bigger minimum in the radius, or half the distance between any of the two adjoining most distant anticlinals in cross section. For example, Christmas Reef and Thistle Reef anticlinals equal 2300 feet on his own big cross section of anticlinal and synclinal axes, and this would give 1150 feet as a minimum of denudation, and taken from a "*definite standard*," too, of *his own construction*.

He seems, however, to be aware of this standard, but ignores it for some reason best known to himself, as in paragraph 3, page 10, he says: "As the distance between the anticlinal axes and the synclinals on either side are irregular it follows that the outcropping beds on one anticinal may be deep below the surface at an opposite point on the next anticlinal (Fig. 14), *or they may be removed by denudation.* This is illustrated by the transverse section across the several axial lines on the south side of the railway line." Mr. Dunn, paragraph 1, page 11 says:—"The more yielding, slaty beds thickened over the arches." (Fig. 17). I am, therefore, very safe in accepting 1150 feet as the minimum "*definite standard*" of denudation. It will be remarked that I have taken the two most western anticlinals in Mr. Dunn's section, and these are, according to his own showing, the higher part of his No. 2 zone. The denudation must consequently be very much greater where the lowest beds of his No. 3 zone outcrop.

Mr. D., page 10, par. 4, "From one anticlinal to the next in the surveyed area (No. 1 central zone), the distance ranges from 300 to 1300 feet. Further west than the survey extends, the distance appears to increase between the axes."

Mr. N., *Mining Journal* article I., July 19, 1884, par. 2 . . "The corrugations are closer together and the strata more decomposed where the main reefs occur than otherwise, and especially nearer the granite"

Mr. D., page 19, par. 10, "Where as in the Christmas, Carshalton, and other lines of reefs, the east legs have proved highly profitable to work, they prove that over the 'centre country' at a higher level than the present surface there were auriferous saddles of which these legs are the remnants, and they as good as demonstrate that below auriferous saddle reefs will be found recurring along the axial line." Page 7, par. 6. "The wonderful hoards of alluvial gold . . . . were gathered from the rocky matrix by denuding agencies, and the greater richnes of the deposits over the area in which the *deeper rocks* of the silurian series are *exposed* at the *surface* may have been due to the *extra thickness* of auriferous rocks *removed* over such area, or to very rich gold-bearing zones of rock just above the lowest beds exposed, or to both causes combined."

Mr. N., *Mining Journal*, article No. IV., par. 3 (about the middle), "On the Garden Gully reef the surface outcrops merely showed the ends of the legs as they tailed out in depth, the upper portions and the saddles having been swept away by nature's sluicing operations. This top reef was, judging from the surface indication and the legs of the reef left *in situ* of smaller dimensions, much the same as that here depicted—No. 4 and 4a—beneath the surface line, named Ladam's Reef." . . . . "In the sketch section No. 4 I have indicated by dotted lines the saddle-reef, of which there remains only the thin ends of its eastern and western legs to be worked by man. Where saddle formed reefs occur it may be inferred if an eastern underlying reef is found that to the west of it will, in all probability, be discovered a western underlying reef, or at least the 'track' of it. Should such east and west legs or reefs be found, or even their 'tracks' only, the prospecting work is not in vain for the 'centre country' is proved. . . .

(To be continued.)

BAUXITE.

THIS mineral, which was practically unknown in 1870, is now in great demand as the chief mineral from which aluminium is produced, and also in the manufacture of firebricks and the refining of sugar. Messrs. Blackwell and Sutherland in 1872 leased from the Marquis of Downshire 2000 to 3000 acres at Strain, near Ballyclare, County Antrim, and two years later an excellent quality of bauxite, containing 54 per cent. alumina and from 1½ to 1¾ per cent. iron.

The demand at this time for the mineral was very limited, but, as chemistry progressed, it was used in the manufacture of alum, sulphate of alumina, and alum cake, and the property was developed and levels were driven to meet this demand. There was a large demand at this time for beetroot sugar, in the manufacture of which a large quantity of useless waste was produced. Mr. B. E. R. Newlands, an eminent chemist, and then manager of one of the largest sugar works in London, conceived the idea of running liquid sulphate of alumina on to the beetroot waste, which immediately liberated some 20 per cent. of sugar, and transposed the sulphate of alumina, consequent upon the potash contained in the waste, into crystal alum. This became a very profitable operation, as it produced from the practically waste substance a large quantity of sugar, and converted the sulphate of alumina into crystal alum, which was re-saleable at considerably higher figures than had been paid for it as sulphate of alumina, whilst the sugar was produced practically free of cost. Mr. Newlands was anxious to produce his own sulphate of alumina, and his desire was, provided he could find bauxite in sufficiently large quantities, to do it at a considerable reduction.

This, so far, was no easy matter, as there had been no quantity of bauxite found except at Baux, near Arles, in the South of France. Mr. Newlands, therefore, visited the mines at Irish Hill, and was so satisfied that he henceforth bought largely. Following in the wake of this the firm received enormously large orders from the States and the Continent, and also from the various alum manufacturers in England and Ireland. The mining by levels did not produce sufficient bauxite for the purpose of supplying this increased demand, and, therefore, the proprietors conceived the idea of sinking a shaft in order to get at the lower strata of bauxite, which was done, the shaft being called "Ivan's Hope," and large quantities of the ore produced. In the meantime the mines were floated as a company, under the name of the Bauxite Company (Limited), with offices at 25-27, Irwell-chambers, Liverpool, and in consequence of the still further demand for the ore, put down a new shaft at considerable expense, and enlarged the tramway and depot to such an extent that they are prepared to deliver 2000 tons of bauxite per week. The shaft is now completed, entirely new machinery erected, and improved and increased tram lines have been laid down. The ore, of the usual finest quality, has been struck at a depth of 146 feet, and the Bauxite Company (Limited) is now prepared to supply this mineral, testing still about 54·57 per cent. alumina in the dry state, and from 1·50·2 per cent. iron.

A DISCOVERY of what is considered payable gold, about 8 miles below the Thames township (N.Z.), is announced. Mr. Murray, of Paeroa, and others, have made highly satisfactory tests, and are now negotiating with mining people in South Island to take up the matter. A second find of a large reef on Marshall's Farm, at Matakoto, promises well. A trial crushing of one load gave a return of just 1 ounce of gold to the ton.

THE TOWERS HILL GOLD MINE,

LIMITED.

CHARTERS TOWERS, NORTH QUEENSLAND.

Incorporated under the Companies' Acts, 1862 to 1890.

CAPITAL £80,000, in 160,000 SHARES of 10s. each.

53,333 Shares, fully paid, to be issued in part payment of property (being the maximum amount allowed by the Rules of the Stock Exchange).

106,667 Shares to be issued at 1s. on Application and 1s. 6d. on Allotment, the balance (or any portion thereof as may be required) in calls not exceeding 2s. 6d. per share, at intervals of three months.

Directors.

William McKeand, Esq., 8, Dane's Inn, W.C., Chairman Wheal Basset.
Douglas A. Onslow, J.P., 5, Upper Richmond Road, Putney, S.W.
Major Prust, J.P., 108, Netherwood Road, Kensington, W.
Charles Bradley, Esq., Ferney, Kew Road, Richmond, S.W.
Colonel Wm. Hy. Moffatt, 61, Marloes Road, Kensington, W.

Local Directors.

George Cavey, Esq., J.P., Mine Owner, Charters Towers.
Robert Russell, Esq., J.P., Mine Owner, Charters Towers.

Bankers.

Martin's Bank (Limited), 68, Lombard Street, London, E.C.

Solicitors.

Messrs. Courtenay, Croome, Son, and Finch, 9, Gracechurch Street, London, E.C.

Auditors.

Messrs. Elles, Salaman, and Co., Chartered Accountants, Weavers Hall, 22, Basinghall Street, E.C.

Secretary and Offices.

SYDNEY C. WHITTLE, 229, GRESHAM HOUSE, LONDON, E.C.

ABRIDGED PROSPECTUS.

This Company has been formed to acquire and develop an Extensive Gold Mining Property, known locally as the Towers Hill Tunnelling Company, and such other properties as may be acquired at Charters Towers.

The area of the property known as the Towers Tunnelling Area is 63 acres 3 roods, held under Miners' rights or licence from the Crown, No. 1858, held under the usual conditions.

The property is practically in the midst of a well-known group of Mines of this celebrated Gold Field.

It is situated south of and adjoining the North Australian, the North Australian Block, Rainbow, and Mosman's Company, on the east it is joined by the Mary P.C. and Rainbow Lease, on the west by the Hidden Treasure Mine, and is north of and adjoining the Moonstone Mine.

The property covers an area on the underlay of the six lodes of about a half mile in length by a quarter mile in width, thus forming one of the largest mining properties on this famous Gold Field.

Mr. D. Missingham, the well-known Mining Surveyor of Charters Towers, in his Report on this Lease, says:—

"The P.T. area is traversed by no less than six distinct and well-defined reefs, all of which have been proved to various depths, ranging from 70 to 80 feet in the Contest to about 1000 feet in the North Australian. The whole of the reefs, excepting the Moonstone, dipping north-easterly, with a north-west and south east strike.

"The North Australian is a true fissure lode between walls of extremely hard syenitic granite. This reef is still being worked by the Mosman Gold Mining Company, and the recorded yield from 1875 to date of report (November, 1891) is 20,895 tons 8 cwts., for 46,518 ozs. of smelted Gold, an average of over 2 ozs. to the ton. This reef dips at an angle of 45 degrees, and the area to be exploited on it is about 40 acres.

"The next reef is the North Australian P. C., and is also being worked by the Mosman Company, the walls and dips similar to the North Australian, area 45 acres to be exploited.

"The Contest Reef runs North and South, and dips East at an angle of 80 degrees, junctioning with the North Australian, P. C. Reef 605 tons 18 cwts. of stone yielded 746 ounces of Gold, the line of contact proved by Mosman's to be extra rich. About 12 or 13 acres of this lode will be found in the area.

"The London Reef dips easterly at an angle of 30 degrees, the cap has been worked to 50 or 60 feet. This reef will join the north Australian at a depth of 400 feet vertically.

"The Peabody and Standard have been worked for a return of 4271 ounces from 2592 tons of ore treated.

"The Moonstone Reef strikes north and underlies easterly at an angle of 30 degrees. The reef junctions with the Standard and Peabody as shown, and very rich gold was won from every claim that worked on the junction."

GOLD RETURNS.—Certified returns from the office of the Warden of the gold field show that the average yield of gold from large quantities of quartz raised and crushed from the lines of reefs traversing this area are exceptionally good. From 1875 to 1891—Tons crushed, 26,995; yield of gold, ounces, 54,761 18 13.

The total yield of gold from the Charters Towers field is set forth in the "British Australian" newspaper, March 9th, 1893, as follows:—Ounces. 2,558,376; or a total value of about £9,000,000.

The rapidly-increasing output of gold and dividends from Charters Towers, with the improvement of reefs at great depths, and facilities for mining, milling, and treatment of ores, fully warrant the high estimates formed by practical authorities of the immense value of this gold field for the profitable investment of capital.

Amongst the best paying mines on this Gold Field are the following, with dividends paid for 1892:—Day Dawn P.C., £12,500; Victoria, £41,400; Brilliant, £37,500; Mills United, £22,500; Victory, £97,500; Day Dawn Block and Wyndham £49,840; and for 1893, Mills United paid no less a sum than £97,500; Victory, £80,000; Victoria, £32,400; Brilliant, £18,750; Kelly's Queen Block, £15,800, and New Queen, £11,958.

The immense success of so many of the mines on Charters Towers are sufficiently encouraging to warrant the development of properties in good positions on recognised and well-proved lodes.

With the magnificent prospects daily increasing in most of the Charters Towers Mines, it may be fairly assumed from the position of the Towers Hill Mine, and the value of the reefs underlying the property, that it will soon take a prominent place amongst the best mines of the field.

Full prospectus, contracts, originals of reports, and copies of the Memorandum and Articles of Association, can be inspected at the offices of the solicitors to the Company.

Applications for shares should be made on the forms accompanying the prospectus, and sent, with the deposit, direct to the Company's bankers. In any case where no allotment is made the deposit will be returned to the applicant in full; and when the number of shares allotted is less than the number applied for, the surplus will be credited in reduction of the amount payable upon allotment.

It is intended to apply for a quotation of the Company's shares on the London Stock Exchange.

Prospectuses and forms of application can be obtained at the offices of the Company, or from the bankers or solicitors.

London, March, 1894.

MEETINGS OF MINING COMPANIES.

THE FLAGSTAFF COMPANY, LIMITED.

A lively and prolonged meeting.—The composition of the directorate.

THE adjourned first ordinary general meeting of the Flagstaff Company was held at Winchester House, Old Broad Street, yesterday afternoon, the chair being occupied by Mr. GEORGE HOPKINS, C.E.

The SECRETARY (Mr. Frederick Hopkins) read the notice convening the meeting.

The CHAIRMAN said: Gentlemen, during my absence I am sorry to see that so much energy has been wasted in circulars and correspondence. I do hope that from this day forward it will cease, for it is very injurious to the company, and there are quite difficulties enough in managing the Flagstaff property without having an internecine war going on. One of my duties to-day is to give you some little history of the company since its reconstruction. The confirmatory meeting was held on November 6th, and after the preparation of the agreement, and other necessary documents by our solicitor, and the sending out of the applications to shareholders, the company was enabled to register on December 18th, and to allot 141,100 shares to 219 shareholders. The directors then extended the time for application, and they continued to come in somewhat more slowly, but on Jan. 9 another agreement was filed, and, there still remaining some shares unapplied for, the liquidator invited shareholders to tender for the shares that he was obliged, under the terms of the agreement, to offer for sale, and the result was that, by Feb. 17, the whole of the remaining shares were allotted, making the complete number of 240,000 shares. Whilst this was going on, a certain amount of work was being carried on at the mines. The shaft was in a bad condition, and was being substantially repaired. Professor Vincent gave instructions before he left that any spare time should be devoted to developments of the ore bodies. That was a very wise and economical arrangement, and it is what has been done. The shaft has been repaired down to the 600 level. You will remember that at the 600 level a bulkhead was put in so as to keep the length below the 600 clear from any *debris* falling into it. Our foreman writes that in consequence of the non-delivery of timber he has not made quite such a good job of it. However, the shaft is repaired and in working order down to the 600—and, in fact, down to the lowest level. In carrying out the explorations a certain amount of work has been done, but he has only been able to do it between times. They have taken out something like 40 tons of ore from the faces of the drifts. That is all that has been done during the last three months, and, under ordinary circumstances, my duties would now cease, there being no accounts to submit; but to-day we have something more to do. You are aware that, under the Articles of Association, the present board of directors retire at this meeting, and it is your duty to-day to elect a new board. Under the Articles the directors must be not fewer than three and not more than seven. Now, I know very well that amongst the body of the shareholders there is a very strong feeling against Professor Vincent having a seat at the board. The way the matter was left at our last meeting was that some sort of a compromise or arrangement was arrived at. The present board should hold office until the statutory meeting, and then at that meeting the shareholders would have the opportunity of choosing whomsoever they wish to act as directors in the future. My colleagues, in my absence sent out a very moderate and proper circular to the shareholders for the reason that they were anxious to get an expression of opinion from the shareholders as to what their wishes were in respect to the new direction—whether they wished Professor Vincent to go on to the board or not. In response to that circular we have received from 168 shareholders, proxies representing 61,094 shares, and we have received 17 proxies representing 56,577 shares in favour of Professor Vincent. That is to say that about half the shareholders have responded to the invitation, and, speaking in round numbers, about half have signified their wishes in one direction, and half in another. Those 56,577 shares are, however, irrespective of Professor Vincent's own holding. He is the registered holder of 45,000 shares, and if you add those to the 56,000 odd, you will get a total of 101,000 as against 61,000. Now, you know what that means—a majority of shares, but not of shareholders. It is for you to decide what is the best to be done under these circumstances. I and my colleagues have been resolving the matter in our minds, and, as I am your Chairman, I may at once say that I have always been consistent in seeing no reason why Professor Vincent should not have a seat at the board, though it is fair to say that my opinion is not fully shared by my colleagues. I draw this distinction—it is one thing to say that Professor Vincent shall go out and manage the mine, and another to say he shall have a seat on the board. He has known the mine for 20 years, and I think we should be short sighted if we did not make some attempt to utilise the knowledge and information the Professor must of necessity have acquired. At the previous meetings I have said that the board will be strong enough to control Professor Vincent. Now, the proposition I am going to make—one which I am sure it will be in the interests of the company to accept—is that as there are under the Articles of Association seven vacancies which may be filled on the directorate, that we should elect the present board in its entirety, together with the three gentlemen who have sent in the proper form of notice, that they intend themselves for election. That would be, I think, a way of throwing oil on the troubled waters, and of avoiding a great deal of heart burning. The three new candidates are Dr. Leggett, Mr. A. W. Jolly, and Professor Vincent.

Mr. TAPE enquired whether Professor Vincent had qualified himself for a position on the board by having held his shares in the new company for a sufficiently long period.

The CHAIRMAN replied that Professor Vincent had become a registered shareholder at the earliest possible time, though in consequence of his having been abroad he was not included in the first allotment of shares.

Some considerable discussion ensued as to whether Professor Vincent was qualified to be a director; several shareholders expressing their conviction to the contrary. Eventually, Mr. TAPE proposed that the names of the present directors should be taken *seriatim*, which was done—the vast majority of shareholders present voting in their favour.

Professor VINCENT demanded a poll upon the question of the election of the last three gentlemen, and also upon his own candidature, which was rejected by a similarly large majority.

The CHAIRMAN having decided that the poll should take place during the ensuing week, the proceedings terminated.

LEVANT MINE.

Loss of £357.

A four-monthly meeting of the shareholders was held on Tuesday last on the mine, the PURSER (Major White) presiding. The accounts showed the labour costs to have been £7580; merchants' bills, £2191; traction engine (balance), £247; coals, £849; rents, rates, and taxes, £369; interest and commission, £16; total debits, £11,253. On the other side, 204 tons 15 cwts. of tin had been sold for £8699, less dues; copper sales, £1723; carriage of copper ore, £115; arsenic sales, £335; discounts, £41, leaving a loss on the 16 weeks of £337. There was a balance in favour of the shareholders of £577.

The CHAIRMAN said there was an increase of £200 in the labour costs, which was in consequence of their taking about a score of hands extra, the men having been idle, because Botallack had loosened hands. He did not like to see the men going about the parish without work, and had consequently taken in all he could. (Hear, hear.) The Chairman added that he supposed the ends were looking better than they had for years. Replying to questions, he said that the arrangement under the new lease was that when the mine was making dividends they should pay 1-24th dues, and when there was no profit they should pay 1-48th.

Captain W. JAMES said it was distinctly understood at the last meeting of the committee, which he attended, that no dues should be paid when there was a loss of £300.

The CHAIRMAN: There was no such arrangement.

Captain JAMES: It was made in your presence.

The CHAIRMAN: But the lords did not consent to it.

Captain JAMES remarked that in such case he should have no lease. He doubted whether there was another mine in Cornwall which would have a lease on terms which did not provide for the payment of no dues on losses.

The CHAIRMAN said the lease had been finally settled on those terms, and the trustees whose names appeared on the lease were Mr. T. B. Bolitho and Mr. T. W. Field.

Mr. HENRY OLDS moved the adoption of the accounts.

Captain JAMES seconded, and it was carried.

The PURSER said the man-engine had been put to work and with very satisfactory results. This cost £150, but will effect great economy.

Mr. R. THOMAS observed that one of the engines was said to be consuming too much coal.

The PURSER said this would have attention.

Captain JAMES thought the blacksmiths ought to do the work which is now sent to the foundry.

The PURSER replied that they say now they have too much to do. Their cost is £9 or £10 a month, which, in a mine employing 600 people, is not excessive.

The PURSER, in reply to Captain JAMES, said they have 700 tons of stamped copper to sell if they can get £1 a ton for it, but will not let it go for 10s. a ton. The prospects for next account are good.

KILLIFRETH MINE.—A four-monthly meeting of adventurers in Killifreth was held on the mine, on Tuesday, the purser, Mr. T. F. Trounson, presiding. There was a large attendance of shareholders. The accounts showed—Labour costs, £2969; merchants' bills, £1430; Lord Falmouth's (dues and rents), £137; stannary assessment, £4; income-tax, £56; Kenwyn parish rates, £36; purchase of land, £8; boiler insurance, £4; arsenic certificate, £3; bankers' charges, £10; total liabilities, £4661. On the other side, 120 tons of tin had been sold for £5324; arsenic had realised £193; tinstone, £7; extra carriage of tin, £13; discounts, £37; and rent of field, £3—making the total credits, £5579; and leaving a profit on the 16 weeks' working of £917; and balance in favour of the mine of £977. The average price of tin was £44 1s., compared with £48 9s. 6d. the previous account, and £49 4s. at the August account. A dividend of 3s. per share was declared.

MISCELLANEOUS MEETING.

NORTH'S NAVIGATION COLLIERIES.

A prosperous year and a satisfactory dividend.—Operations to be extended.

THE sixth ordinary general meeting of North's Navigation Collieries was held on Wednesday, at Winchester House, the chair being occupied by Colonel NORTH.

The SECRETARY (Mr. E. T. Prior) read the notice convening the meeting.

The CHAIRMAN, in moving the adoption of the report and accounts, said he felt quite certain that the house coal, which the company had lately been supplying at a very low price, was of a quality which it was well-nigh impossible to beat. Notwithstanding the bad times they had experienced and the six weeks' strike, the output had been fairly satisfactory, and the house coal already mentioned had been sold for 25s. in London when 42s. was being asked for coal which was no better. He was heartily pleased to meet the shareholders with such a gratifying prospect for the future. About £90,000 had been spent in sinking the new shaft, and in the result they had gone through four seams and would, he hoped, go through some more. Besides the house coal they had steam coal which was as good as any, and they were going shortly to get the Admiralty to try it. He hoped the shareholders would give the company's house coal a trial, which could be supplied to their houses at 22s. per ton. At present they had to pay rather heavily for freight, but he thought they might find it cheaper to send it by barges.

Mr. T. FORSTER BROWN seconded the motion for the adoption of the report and accounts, which was carried unanimously.

The CHAIRMAN then moved the declaration of a further dividend of 3 per cent. on the ordinary and preference shares, making with the interim dividend a total payment for the year 1893 of 10 per cent. upon the preference shares, and of 5 per cent. on the ordinary shares. He said that he saw no reason why a much larger dividend should not be paid next year. It was satisfactory to know that the company were working harmoniously with all their men, and he might mention that he had received two testimonials from them—one a silver casket, and the second an address signed by all the men on the property.

Mr. J. WAITE seconded the motion which was carried unanimously.

Messrs. R. R. Lockett and E. L. Evan Thomas, the retiring directors, were re-elected.

Mr. FORSTER BROWN, in accordance with the wish of the meeting, gave some particulars of the company's operations. He said that he had already at former meetings told the shareholders that they had an exceedingly large extent of mineral property, and that when it was acquired much was still undeveloped. The directors at that time came to the opinion that two things were necessary for turning its wealth properly to account. One was to effect a reduction in the rates of carriage. The coal field was situated in the middle of the South Wales coal fields, a good distance from both the principal east and west ports. That being so the railway rates were rather high as compared with those of the other competing collieries. One of the first things they did, therefore, was to try and effect a reduction, and they succeeded in promoting a railway which, when completed, would be instrumental in largely decreasing the rates to the East. They had also made an effort to get an outlet on the west, and they had promoted a scheme for the construction of a dock at Port Talbot, to be connected by railway with the company's principal collieries, which would probably effect a considerable reduction in the rates on whatever coal could be shipped at the dock, probably amounting to 1s. a ton, a sum which, upon many thousands of tons, was not an unimportant one. In that direction, therefore, they could look forward to a permanent reduction in outlay which would be especially beneficial in bad times. The second point he had mentioned as having attracted the attention of the directors was the question of developing the undeveloped properties. It was decided to sink two important steam coal pits on the undeveloped area, and up to the present something like £90,000 had been spent, in addition to which they were now spending £12,000, which they imagined would be sufficient to equip the colliery so as to produce about 1000 tons a day. Now it was producing something over 300 tons a day. They were now working a good thick coal seam about 6 feet in width, and they had every reason to believe that it would become a very important producer of coal, while if they were to get a short railway from the colliery to Port Talbot that would be an additional advantage. In other directions they had opened large seams of very good house coal. Thus a colliery upon which they had spent something like £15,000 or £20,000 was in the way of becoming the producer of a very large output, which they hoped shortly to double. The further capital required to achieve this was practically insignificant. The meeting would remember that the price formerly obtained for the small house coal was a very small one. After investigating the matter for some time, with a view of ascertaining whether some portion of the small coal could not be made into coke, the directors authorised the engineers to build 60 coke furnaces, which were accordingly built about three or four years ago. The shareholders would, no doubt, be gratified to learn that the furnaces had already paid their capital twice over—(hear, hear)—and the coke was exceedingly good. He hoped that shortly the management would see their way to increase the production of coke. The directors intended to stick steadily to the course they had marked out for themselves, and as long as they did that he felt sure the future of the property was assured.

The auditors, Messrs. J. O. Chadwick and Son, having been re-elected, a hearty vote of thanks was given to the Chairman for the manner in which he had safe-guarded the interests of the company.

The proceedings then terminated.

MIDLAND COAL, COKE, AND IRON COMPANY.

A new and hopeful start.—Works of improvement.

The first ordinary general meeting of the Midland Coal, Coke, and Iron Company was held on Thursday, at the Cannon-street Hotel, the chair being occupied by Captain HEATHCOTE.

The CHAIRMAN said:—Gentlemen, this meeting is held in accordance with the Companies' Act. The company has been reconstructed, and was registered on December 1, 1893. The reconstruction scheme was the result of the deliberations of a committee chosen by the shareholders and debenture holders together. The shares were reduced from £10 to £5, and power was given by those who are now second debenture holders to raise 90 000 by first mortgage debentures as first security. Of the shares, which were 37,500 in number, with £4 paid, and with a remaining liability of £1, some 29,891 have been allotted. The scheme contemplated calling up this liability, but the directors have endeavoured, as far as possible, to avoid doing so until it was absolutely necessary, and that necessity has not yet arisen. The debenture interest of the old company has been paid to January, 1894. The first debentures of the old company have been called in and changed into second debentures of this company. The debts of the old company have practically all been paid, except some few about which the amounts are in dispute. There are in course of being issued 75,000 prior lien bonds, or first mortgage debentures. The interest is only four per cent., and I think that anybody who knows anything at all about mining, and looks at the bare statement of facts in the prospectus—for it was felt that such security required no puffing—will see that the security for the money is ample. In fact, the interest is paid without any reference to the mines at all; it comes from surface rents of farms and houses. Anybody who knows anything about mining must know that 4d. a ton royalty for coal and a 1s. for calcined ironstone is at such a rate that a tenant could be found at any time to pay such royalties if the company were to go into liquidation. Had the security been of a doubtful nature it might have been necessary to have fresh valuations made, which would have been very expensive, but it was thought that, where the breaking up value of the plant pretty nearly represented the bulk of the money asked for, it was not worth while to go to the cost of having expensive valuations. (Hear, hear.) It would have been a mere waste of money. The new works recommended by Mr. Brenton are being pushed on. The Luhrig washer is now very nearly completed. As yet it is too early to say what the results will be, but we believe a material reduction will be effected in the cost of getting the coal, and that will be very much to the advantage of the colliery. The works of concentration at Podmore are also being completed, but they cannot come into effective force so soon, in consequence of their peculiar nature. There is one long stone drift which has to be driven, and only a certain number of men can work upon it at once. They are working now at both ends with day and night shifts, and it is being got forward as rapidly as possible. The full benefit of the improvements cannot, however, be felt for about eighteen months. The furnaces have not been restarted yet on account of the state of the iron trade, but the intention is to restart them as soon as we see our way to manufacture iron at such a price that we can get a profit on it. Under prudent management things have very much improved, though I am sorry to say the price of coal has not increased to a satisfactory extent. Times are very bad, but I hope the future of this company will show very great improvement upon its past.

Messrs. Harvey, Preen, and Co. having been elected auditors, the proceedings terminated.

REDRUTH MINING EXCHANGE.—The annual meeting of the Redruth Mining Exchange Company (Limited) was held, on Wednesday, under the presidency of Mr. D. W. Bain. Mr. G. S. Bray, the secretary, presented the statement of accounts, which showed that the year's receipts had amounted to £103, of which £67 was brought forward from last year. After meeting all expenses there remained a balance in hand of £31.—The directors in their report regretted that the fourteenth year's working had been disappointing, inasmuch as they could not show such a favourable balance sheet as in previous years. That was not due to anything the directors could guard against, but to the prevailing depression in mining. There had been a large decrease in the non-shareholders' list, the numbers being 109 against 129 in the previous year. Out of the £31 they proposed a dividend of 5s. per share. The directors felt confident that with the return of prosperity in mining they would see that the Exchange was as much valued as ever as a place of business. All the directors retired at that meeting, but offered themselves for re-election.—The Chairman, in moving the adoption of the report and accounts, remarked that depression was not confined to the mining industry, but was general throughout the United Kingdom, and he believed when trade improved mining would participate with the other industries, and hoped the better state of affairs would soon come about. (Hear, hear.)—Mr. J. Wickett seconded, and the motion was adopted. Messrs. D. W. Bain, S. Abbott, W. Rowe, S. J. Davey, J. Wickett, J. Sims, M. Edwards, A. Lanyon, T. Pryor, R. Nettel, and R. S. Teague were re-elected directors.—Thanks to the Chairman concluded the business.—The annual meeting of subscribers to the Mining Exchange was then held, Mr. D. W. Bain in the chair.—Mr. W. F. Edwards, secretary, in his statement of accounts, showed that the receipts amounted to £116 and the expenses to £81, and the profit of £35 had been handed over to the Mining Exchange Company (Limited).—The accounts were adopted.—Messrs. Letcher and Johns were re-elected to serve with the 11 directors of the company as the Exchange Committee.—Mr. Milford Milford inquired whether the entrance fee of £5 was not too much, and whether it could not be reduced with advantage to half that amount.—Mr. Menhennick thought £5 was altogether too large, and believed that the excessive entrance fee had been the means of reducing the price of shares from £25 to £8. He gave notice to move that the fee be reduced.

THE new cyanide works at Langlaagte Royal are soon expected to be in full swing. They consist of six 400 ton vats, capable of treating from 12,000 to 15,000 tons of tailings a month. The February output is likely to be somewhere about 1200 ounces, an increase of 300 ounces on the January output. The company is erecting a substantial manager's residence, which cannot cost much less than £2000

THE CORNISH TIN STREAMS.

WORKING ON THE RED RIVER.

THE Cornish tin streamer is by no means a seeker after the ore which is known to mineralogists as "stream tin." He is an altogether modern invention, and depends upon the charity of the big mines, as one may say, for his subsistence. For the ore produced in these mines contains for the most part only a very small proportion of stannic oxide. It is first of all broken by the stone crusher; a ghastly instrument which reminds you of a giant eating hard biscuit very greedily. Then it is taken to the "floors"—great sheds, open at the sides, and with cobbled floors—and broken yet smaller by girls—"bal maidens," as they call themselves. Next, the stone is fed to the "stamps"—huge iron hammers, which work night and day, and fill the surrounding country with a sound resembling that of a distant and angry sea. Here the stuff is reduced to a powder, and a stream of water washes it out into long trenches in front of the stamps. The lighter portion of the ore is thus partly removed, and though, as will be seen, the process of purification is a complicated one, it consists entirely of various applications of the principle that water, running over a sand made up of various constituents, will gradually eliminate the less weighty components. The concern of the tin streamer lies with this lighter portion which is carried away from the mine. It is currently asserted that the loss of tin in the Cornish mines is proportionately

Less than in the Dressing of Gold Ores.

Nevertheless, the sand which is carried away with the waste water from the mines is by no means worthless. There is much hæmatite in tin stuff, and thus everything about the mines is stained a dull red. This is true of the water which has been used to wash the tin. It runs away from the mines, and small individual streams unite in the valleys to form what is known as "The Red River." Many a tourist skirting the Cornish cliffs must now and again have seen the sea incarnadined over a tract extending for many miles. And from their sources below the mines, right down to the very beaches, the tin streamers will be found at work along all the red rivers. First of all the water is turned aside from its channel, and made to run through huge ponds. Sometimes they are 100 yards long, and their banks—built of furze-faggots and slime—are 15 to 20 feet in height. In these the water gradually deposits, in the form of a red slime, the first portion of its burden. There may be a dozen of the ponds at a single works: and the flow of the water is only stopped when any particular one of them is almost filled with the deposited slime. This is then worked up with water, which carries it on to the "rag frames." Briefly, the rag frame is a slanting wooden table, over which the slime-laden water is made to flow. A deposit of slime forms, and the waste flows off by a wooden gutter. Presently

A Lever is Lifted with Double Effect.

The first gutter is shut off, and another opened, and the frame is suddenly flushed with clean water, whereby the deposit which has formed upon it is carried away through this second gutter to certain ponds, called covers, where it is allowed to settle. Out of these covers the slime is presently conveyed over another set of frames, which are known as "cleaner frames." In the first stage the work is overlooked by little boys. Here, however, it is in the hands of girls and women, who wear big white aprons, and sun-bonnets so closed that their faces are hardly to be seen. And some of them are pretty. The slime-laden water still flows over the frames, and the "maidens" carry long handled and very long-haired brushes, with which they spread the slime abroad, and expose the whole deposit to the action of the water. Thus a further separation is effected, and the slime is carried on to yet another set of covers. The girls who are employed at this work are at it all the year through for about 10 hours a day, and they are absolutely without shelter. Yet most of the girls in mining villages prefer this life to that of the domestic servant. Indeed, if there were frequent frosts tin streaming would be almost impossible, for

Frost Plays Havoc with the Frames

unless your night-watches are very much upon the alert indeed. When the water from the cleaner frames has deposited so much slime as suffices to fill one of the covers, it is made to run elsewhere. The slime is then taken away in wheelbarrows to the "buddles." These are of varied forms, and are, in fact, only another method of applying the principle of the frames. The simplest form of buddle is merely a gutter down which the slime-laden water runs, to fall presently into a circular pit. An exit is provided for the water at the side of the pit; the sand or slime remains behind in a circular deposit, the heavier particles being at the centre, the lighter at the circumference. When the pit is almost full the water is stopped. A man skilled in such judgments takes a shovel and marks three rings upon the pile; the outer layer is thrown away, and the other two are fed by means of water to the other buddles. But this rudimentary form is only used in one particular instance. Commoner is a slender-spoke wheel revolving in a plane parallel to the bottom of the circular pit. Some of the spokes are wooden gutters; others are merely poles, from each of which a long brush, fitted with very soft hairs, is suspended by a couple of strings. At the axle of the wheel is a circular cup out of which the gutters open. The slime is placed in a wooden trough, where water trickles over it, carrying it down a "launder" to the circular hollow at the centre of the buddle. Thence the water

Is Distributed to the Revolving Gutters,

and from them falls into the pit. It flows away at the centre, but most of the matter it holds in suspension is deposited; and in this form of the machine the heaviest and best of the stuff is at the outer edge, the lightest at the centre. The hanging brushes gently stir up the surface as they revolve, so that the lighter particles may so far as possible be carried away. Here again the final deposit is divided into three sections. The inner lot is very likely rejected; the other two are once more buddled. The process may be again repeated; then the slime is carted away to the "burning house." Here it is calcined. Sulphur and arsenic are driven off, the arsenic being subsequently refined; and the remaining mixture of oxides, now of finer texture, is taken back to the stream. It is now too precious to be treated in the open; it is buddled again *ad infinitum*, in a great wooden shed known as the "tin-house." Finally the chosen portion is pitched into huge tubs, or kieves, with water; in front of each a small boy takes his place with a heavy iron bar. He stands it on its end upon the ground, and at regular intervals brings it forward and gives the kieve a heavy knock. In this way the slime is packed together. Sometimes the upper portions are rejected. The rest goes into lockers, and thence is carted at the end of a month to the smelters at Hayle and Penzance. For some reason or other it fetches a smaller price. It will be obvious that only the finer particles ever get into the ponds. The rest are deposited

In the Bed of the Red River,

and this performs naturally what is effected by artificial means in the frames and buddles. The streamers, therefore, have learnt of late years to raise the level of the river bed by means of a board stretched across it. The sand is thus arrested, and the water to some extent removes its lighter particles. Presently the water is turned off into another course, and the sand is thrown out upon the banks. As it is wanted it is conveyed to the pulverisers. These are great revolving cylinders, which contain a large quantity of loose scrap iron. The sand is passed into them by a current of water, and they are so devised that it can only find its way out when it has been finely powdered. And it is the sand which issues from these pulverisers which is treated in the first place by the rudimentary buddle described above. Afterwards that part which is not rejected goes through pretty much the same processes as the stuff which gets deposited in the slime pits. These tin streams return a very large quantity of tin every year. It would seem that any number of them may subsist upon the same stretch of the Red River. And even when the water gains the sea it is by no means wholly deprived of its tin. —*Pall Mall Gazette.*

MINING NOTES.

HOME, COLONIAL, AND FOREIGN.

WE learn by this New Zealand mail that the directors of the Alburnia Company have decided, subject to the approval of the shareholders, to purchase the Dixon claim, which lies on their north-west boundary, and to amalgamate the same with the Alburnia Mine. The terms proposed to be given to the owners of the Dixon claim are £1200 cash and 10,000 shares, and a meeting of the shareholders is to be held to consider the matter on the 15th proximo. The advantages to be gained by the company through the carrying out of this amalgamation are very considerable, as it not only provides them with a 20-stamper battery, fitted up with Berdan's pans, &c., and which is also connected direct with the mine by an aerial tramway, but it also provides a way for re-opening the upper levels of the Alburnia section, where large blocks of comparatively low grade ore are known to be extant, and for working the same at a profit to the company through the facilities that will be provided for cheap transit of the quartz and subsequent treatment of the same.

THE Golden Sunlight Mines, near Whitehall, Montana, were sold, in the second week of March, to a New York company. Active operations will soon be commenced by the new owners, towards placing substantial and improved reduction works on the property, and development will be carried on extensively. Work has already begun on a 900-foot tunnel, which will strike the vein at a depth of 600 feet. Mr. W. J. Clark, of Neihart, will be general manager. About the time the tunnel is driven, which will occupy three or four months, a 150-ton concentrator and 250-ton smelter will be in course of construction. A large air compressor will be installed in a very short time. About 5000 feet of development work has already been done on these claims. The mines are chiefly gold producers, the ore being high grade. There are 17 locations.

MR. MOSELEY has suggested the reconstruction of the North-Eastern Bultfontein Company (Limited), and has put the new capital at £200,000. Of the new shares 20,000 would go to present shareholders and 153,000 to creditors and debenture holders. As the 20,000 shares would be issued (in the ratio of one new for five old) carrying a liability of 5s., and as Mr. Moseley would take up 10,000 at par, a working capital of £15,000 would be provided. Mr. Moseley is to take a life governor's share, carrying one-third of the net profits, in return for which he is to give his services as managing director free of charge; and he further proposes to be appointed the permanent broker, with the usual 1 per cent. commission on all sales. The creditors are stated to concur in the scheme.

A DALZIEL telegram from Pittsburg, Pa., says the United Mine workers are perfecting their organisation for a general miners' strike on May 1. It is intended that 100,000 miners shall be called out.

IT is probable that for the past year the coal production of the United States will about equal that of the United Kingdom. The output of the United States is given as 183,422,000 "tons"—that is, the net ton of the States. Our own output is not yet known, but owing to the strike it must be lower than in the previous year.

THE great market for coal at Alexandria has this year, so far, taken 133,000 tons of coal. In the last week reported on there were 9000 tons imported—of which 2500 tons were from Newcastle, 4000 tons from Cardiff, and the remainder from Scotland.

DURING January the Lisbon-Berlyn Company crushed 450 tons for 81 ounces, while the tributors obtained 110 ounces from 120 tons. The producing power has since been considerably increased.

THE annual meeting of subscribers to the Thames School of Mines (N.Z.) was held on February 6, Mr. McGowan (President) presiding. The Secretary (Mr. A. Bruce) read the annual report, which dealt lengthily with the work done at the School during the past year, and he showed that the attendance of students had been exceptionally good.

OVER 360 leases have been applied for in Coolgardie district. Among the best mining speculators in Australia are the Millar Brothers, railway contractors, who built the line in the Northern Territory. They are going in heavily at Coolgardie.

CAPTAIN J. H. MILLS' report gives the mineral output of Montana for 1893 as follows:—Gold, $3,100,500; silver, $29,280,000; and of copper during 1892 there were produced 164,300,000 lbs. Figures for lead include Montana and Idaho, and are 36,500 tons.

THE total dividends declared in Tasmania for 1893 amounted to £118,936 as follows:—Tin, £63,418; gold, £40,911; silver, £600; coal, £606. Mount Bischoff turned out 2400 tons of tin, and paid £61,500 in dividends.

THE following are the gold statistics for the Bendigo and Ballarat districts for the fortnight ending the 28th inst.:—Bendigo—Total yield, 5590 ounces; dividend declared, £9617. Ballarat—Total yield, 6506 ounces; dividends declared, £7375.

A GENERAL strike, affecting 10,000 coke workers and miners in the Connellsville region of Pennsylvania, was ordered on Thursday by the Executive Committee of the United Mine Workers. The men will cease work on Monday.

SOME seven months ago, says the *South Wales Daily News*, Ystradmynach Colliery, Ystradmynach Valley, was taken over by Mr. Tom Morgan, late of Aberbeeg, in the Western Valleys, for the purpose of searching for coal, and after clearing the roadway through the old workings to the boundary of the Old Gelligaer Colliery, a down through "fault" was encountered, which was proved and coal found, but an up through "fault" threw the vein of coal which proved to be the famous Mynyddislwyn house coal into its course. The vein is 5 feet 3 inches in thickness, and of excellent quality. Three narrow headings are being driven, and when fully developed and the stalls opened up, the management will, it is expected, be enabled to work over 100 tons per day of clean screened coal. Last week nearly 400 tons were worked in the five turns worked by the men. From what can at present be seen, there are upwards of 15 acres of unworked area in front of the three headings. The find will prove a great boon to the workmen residing at Llancaiach, Gelligaer, and Maesycwmmer.

THE quantity of lead produced by the Société Métallurgique de Laurium, Greece, shows a great falling-off, the production during the second half of last year only amounting to 3623 tons, as against 3717 tons in the corresponding period of 1892, and 4366 tons in the second half of 1891.

JOINT-STOCK COMPANIES.

NEW REGISTRATIONS.

THE following are among the joint-stock companies registered at Somerset House since our last notice:—

British Guiana Development Syndicate (Limited).—Registered by T. Allingham, 25, Bucklersbury, E.C., with a capital of £10,000 in £100 shares. Object, to purchase the interest of A. E. H. Swift in 23 mining claims on the Demerara river, British Guiana, and to carry on the business of miners and smelters, merchants, &c. There shall not be less than four nor more than seven directors. The first are H. S. Shipton, E. L. Swift, P. Church, and A. E. H. Swift. Qualification, £100. Remuneration to be fixed by the company in general meeting.

British Gold Fields (Limited).—Registered 20th March. Capital £100 in £1 shares. Objects: To acquire and develop certain mining properties now vested in Wm. P. Morgan, M.P.

Vukan Mines (Limited).—Registered by G. O. R. Perry, 16, St. Helen's Place, E.C., with a capital of £10,000 in 5s. shares. Object: To acquire and work the Vukan Mountains Estate, situate in the Vukan Mountains, Servia. Table A mainly applies.

Violet Consolidated Gold Mining Company (Limited).—Registered March 21. Capital £200,000 in £1 shares. Object, to purchase or otherwise acquire from Mr. John C. A. Henderson certain gold mining claims, mines and properties situate on the farms Luipaard Vlei and elsewhere in the South African Republic (Transvaal), and any rights connected therewith, and all machinery, stock, plant, and other articles and effects now in and upon the said claims and properties and to carry on the business of miners, quarrymen, quarry proprietors, timber merchants, lumber merchants, refiners of ores, engineers, manufacturers of mineral or metallic produce, shippers, &c. There shall not be less than three nor more than seven directors. The first are not stated; Qualification 200 shares. Remuneration 10 per cent. of the net profits, divided between them, provided that each director receives not less than £100 per annum.

Coolgardie Mining Company (Limited).—Registered by R. C. Power, 2, York Street, Portman Square, W., with a capital of £40,000 in 2s. shares. Object, to acquire and develop certain mines and mining properties particulars of which do not transpire. There shall not be less than two nor more than three directors; the first are to be appointed by the signatories to the memorandum of association. Qualification, 100 shares. Remuneration, £50 each per annum.

Iron and Marble Company (Limited).—Registered by Carthew and Wheeler, 7, Verulam Buildings, Gray's Inn, W.C., with a capital of £12,000 in £50 shares. Object, to acquire the business now carried on at Victoria, Bristol, under the style of the Iron and Marble Company, and to carry on and extend the same as iron and brass founders, marble merchants, &c. The first directors—to be not less than three nor more than seven—are W. C. Walker, A. J. Horsey, F. W. Sandes, J. Mitchell, and C. Mitchell. Qualification, £250. Remuneration to be fixed by the company.

New Virginia Transvaal Gold Mines (Limited).—Registered by Hughes, Hooper and Co., 26, Budge Row, E.C., with a capital of £50,000 in 10s. shares. Object, to acquire the undertaking of the Virginia (Transvaal) Gold Mining and Developing Company (Limited); to acquire certain other mining properties in the Komatie fields in the said Republic, and to carry on the business of miners and smelters in all or any of its branches. The first directors are to be nominated by the signatories to the memorandum of association. Qualification, 200 shares. Remuneration, £500 per annum, divisible; after payment of 20 per cent. dividend, £1000 per annum, divisible.

West Australian Pioneer Syndicate (Limited).—Registered March 21. Capital £20,300, in £1 shares. Objects: To carry on the business of prospectors, explorers, miners, smelters, metal merchants, storekeepers, farmers, stockmen, graziers, carriers, &c., in West Australia and elsewhere.

Rufford and Co. (Limited)—Registered 21st March. Capital £80,000, divided into 7950 shares of £10 each, and 500 shares of £1 each. Objects: To acquire and take over as a going concern the business of fire clay, porcelain baths, glazed brick and glazed earthenware manufacturers, crucible glass house pot and retort manufacturers and colliery properties carried on at Stourbridge, Worcestershire, by William Holcroft and James Mathews under the style or firm of "Rufford and Co.," and to carry on the same. There shall not be less than three nor more than seven directors. The first are William Holcroft, Thomas Holcroft and George H. Holcroft. Qualification, £500. Remuneration according to the decision of the company in general meeting. Registered office, Hungary Hill, Stourbridge, Worcester.

THE DURHAM COAL TRADE.—The quarterly meeting of the Durham County Colliery Engineers' Association was held on Thursday, at the Shakespeare Hall, Durham. Mr. W. E. Nicholson, of Feary-hill presided, and there was a full attendance of delegates. The Chairman, in opening the meeting, congratulated the members on the satisfactory position the Association continued to hold, both in finance and numbers. Mr. W. H. Lambton, the secretary, read his usual report, from which we extract the following:—"Fellow workmen,—We regret trade is in an unsatisfactory condition, and several pits are working short time, consequently the income of the workers is being lessened on this account, also the profits of the employers. The cause for such is not easy to ascertain. Foreign competition, the late strikes, and the owners newly-formed sales association are all in evidence as being the cause of our present state of trade. There can be no question but foreign competition has recently assumed a very important position in relation to our markets for coal, coke, and iron. To attempt to deny this would be nothing short of folly, and the sooner this is recognised by owners and workmen the better it will be for all concerned. The foreigner has for long put forth his strongest efforts to obtain a higher place in markets at home and abroad with his goods—markets that we in times past had almost a monopoly in, and we are free to admit that he has to some extent succeeded. The strikes of 1892 and 1893 in the coal trade of this country are said to have assisted the foreigner very largely indeed, he taking advantage when supplies were reduced to a low point. On this question there cannot, in our opinion, be much disagreement, and it ought to become our first duty as partial custodians of the trade of the country to seriously consider the situation, and, if possible, try to adopt some means of preventing any cessation of work in order to settle any of our differences, and so keep our place in the markets of the world. The Owners' Sales Association is held blamable by some for having brought about an unsettledness of trade by reason of the prices, &c., that may be charged in the future, which is causing traders to hold off for the present at any rate, and so depress the markets. It is further alleged by some that the Owners' Sales Association has been established for the purpose of keeping up prices. A cry of this kind ought to be taken with a little salt when raised by a certain class of persons. I think the owners have been forced into their present action, largely as a matter of self-defence, thus preventing, if they can, merchants, traders, and others forcing down prices to a point which does not allow a margin of profit sufficient to pay interest for capital and wages. At any rate, whatever may be the object of the owners in forming a sales association, they are in the position to plead justification for what they have done and intend doing, in the face of what merchants, traders, and others have done in the past. These people seem to have been quite oblivious to the interests of the owners, on the one hand, and the workmen, on the other, and are credited with having done a fair share of fleecing the public at the same time. We wish the owners every success with their undertaking, and hope those owners who have not already joined the sales association will do so at an early date. The report was adopted. The balance-sheet and auditor's report were considered and adopted as satisfactory.—The remaining business was of a routine nature.

DR. LEYDS, State Secretary of the Transvaal, has promised to use his best efforts in securing a new Limited Liability law.

[Received too late for classification.]

THE BALAGHAT MYSORE MINES (LIMITED).

ALL Transfers of SHARES in the Balaghat Mysore Gold Mines (Limited) (in liquidation), entitling approved Transferees to apply for an Allotment of Shares in the New Company, must be LODGED at the Company's Office on or before the 3rd day of April, 1894, after which the Allotment will take place.

I. CROCKER, Secretary.

6 and 7, Queen Street Place, London, E.C., 29th March, 1894.

AS SECRETARY to a Mining Company.—ADVERTISER seeks ENGAGEMENT. Thorough proficiency in Company and Secretarial work; great experience of mine administration; with technical engineering and mining knowledge. Experience on Mines abroad. Linguist, and first-class accountant. Unimpeachable credentials.

Address, "Balch," care of J. W. VICKERS, 5, Nicholas Lane, E.C

C. PASS AND SON, BRISTOL,
ARE BUYERS OF
LEAD ASHES, SULPHATE OF LEAD, LEAD SLAGS, ANTIMONIAL LEAD, COPPER MATTE, TIN ASHES, &c. and DROSS or ORES containing
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MAKERS OF BEST RED LEAD FOR FLINT GLASS MANUFACTURERS,
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Undertake the AGENCY and SUPERINTEND the DISCHARGE, WEIGHING, SAMPLING, &c., of Shipments of COPPER, IRON, SILVER, or OTHER ORES, MATTES, &c., to SWANSEA or other Ports, on moderate terms.

PACIFIC MINING AGENCY AND TRUST COMPANY.

A Corporation organised under the Laws of the State of California.
CAPITAL STOCK, £50,000.
BOARD.
IRWIN C. STUMP (Chairman), Manager of the Estate of the late U.S. Senator Hearst.
IRVING M. SCOTT, Manager Union Iron Works.
JACOB H. NEFF, President California Miners' Association.
P. N. LILIENTHAL, Manager Anglo-California Bank (Limited).
W. F. GOAD, Vice-President, Wells, Fargo, and Co.
D. M. BURNS, Capitalist.
R. C. CHAMBERS, Manager Ontario Mine, Utah.
WILLIAM C. RALSTON, Secretary (Secretary California Miners Association).
BANKERS—The ANGLO-CALIFORNIAN BANK (Limited).
HEAD OFFICE — MILLS BUILDING, SAN FRANCISCO, CAL.

THIS COMPANY sells Mines, Mining Claims, Ditch Properties, and Water Rights ON COMMISSION, and will act as Agent and Broker for the Sale and Purchase of such Properties.

It is intended to conduct the Purchase and Sale of Mining Claims, Ditch Properties, and Water Rights on the same basis as a real estate transaction.

The Company is prohibited by its Articles of Incorporation from buying or selling on its own behalf, or except upon commission, or as agent or factor for others.

The buyer pays no fees whatever, and there is no incentive to advance the price beyond the original figures at which the price and commission have been agreed upon with the seller.

It is not intended only to negotiate the sale of an entire property but interests in such may be sold or money obtained for development work.

This Company especially solicits the business of making reports or examinations for non-resident mine owners on any of their mines in the United States, and obtaining special information as to their condition and so forth (said reports being confidential).

Those who conduct the business of the Company have had long experience in mining operations, and it is their intention to place the Company in a position to inspire the confidence of all who seek its assistance in its integrity and fair dealing.

We respectfully refer to any Bank in the City of San Francisco and to the Anglo-Californian Bank (Limited), London, as to the standing of the Board of Directors of this Company.

Descriptions of properties for sale with maps, reports and all necessary information, are left on file in the office of the Company. Abstracts of such reports with prices of mines will be furnished pon application.

California has produced £267,000,000 in gold, and is still producing £2,680,000 a year. There are thousands of claims requiring capital for development. In other Pacific Coast States and Territories there are abundant opportunities for investment in mines of gold, silver, copper, lead, coal, and so forth. Information concerning these will be furnished by this Company on application.

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Editorial and Advertisement Offices:
18, FINCH LANE, LONDON, E.C.

Telegraphic and Cablegraphic Address: "TUTWORK, LONDON."
Codes used: "A.B.C.," Moreing's, and "Universal."

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LONDON: MARCH 31, 1894.

MINING MATTERS IN PARLIAMENT.

THE change which has taken place in the *personnel* of the Government can be expected to have but little effect upon the mining, metal, and allied interests of this country. Political discussions are not likely to be curtailed for the purpose of passing uncontentious commercial legislation, and Parliament must need ignore merely trade questions while it is considering every new "fad" in sociology. How long it will be before we can expect to get a fair hearing for commercial problems in the Imperial legislature, it is hard to say. Sir ALBERT ROLLIT hopes to see that result obtained by the devolution of a larger share of business to Grand and other committees, but while there still hangs in the air the question of creating separate new legislatures for the smaller matters of public concern, we can scarcely expect this proposal to receive much attention. It is always a good plan to seek reform internally, and we think that a good deal might be done by an improved organisation of the representatives of commerce and industry in the Commons. There are some grounds to hope for a less bitterly debated session than recent ones have been, and the members who speak for the House of Commons should do some good by concentrating their attention upon one or two of the most pressing commercial reforms. It is monstrous that the rating of machinery question, for instance, should remain so long unsettled after the mind of the country, and of Parliament, has been definitely expressed upon it. The present inequitable law hampers and handicaps the iron and steel, metal, and machinery trades, and must, therefore, have an adverse influence upon the shareholders in metalliferous mining companies. A more direct interest attaches for them to the long pending reform of Limited Liability law by the placing of a greater weight of responsibility upon the directors of public companies. The lamentable incidents of financial corruption in the past year or two, and the facility with which it has been shown decoys can be obtained, must serve as a convincing argument in favour of the reform. We think that with some dexterity the forces of trade and industry in Parliament might be marshalled to secure some definite results in these two important respects. In the past the commercial party has rather failed in what is specially wanted, and has submitted so many proposals, with nearly equal vehemence, that all of them have been neglected. As to the Government's own proposals for commercial legislation, they have many points of interest for the mining, metallurgical, and cognate industries. Mr. MUNDELLA has promised to deal energetically with that heavy problem, the readjustment of railway rates, so that we may hope at length for a settlement of a difficulty which has long been a burden upon manufacturing industry. The proposal of the HOME SECRETARY to bring in a Bill dealing with the "whole law of metalliferous mines, which is so much in need of amendment," is hopeful. Unfortunately, he has not specified the time when this is likely to take place, neither the nature of the improvements which, from his point of view, are necessary. It may be, after all, but a tinkering process, which will make the remedy worse than the disease. It is somewhat encouraging, however, that he admits amendment is needed. We thought the Government were quite oblivious of this glaring fact. Shareholders in many coal, iron, and steel and engineering companies would have good cause for rejoicing if the Railway and Canal Traffic Act reaches its legitimate end by removing or modifying what has hitherto been a considerable disadvantage for them in the struggle against our foreign competitors. More important still is the measure which the Queen's Speech promises for the establishment of arbitration and conciliation as the means of settlement in labour disputes. Lord ROSEBERY'S action in respect of the disastrous struggle in the coal trade is we hope, a guarantee that this enormously important subject will be wisely and earnestly dealt with. Conciliation, however, is a game that requires two to play at, and the utterances of the miners' leaders with respect to the "living wage" are hardly reassuring as to a harmonious industrial future. It is difficult to see how Government can act in the matter, except by providing the machinery in which a spirit of reasonableness on both the contending sides can manifest itself. It is at all events satisfactory that a compulsory eight hours' day for mines first, and workshops afterwards, seems to recede ever further in the legislative prospect. With so much evidence that employers are willing to adopt shorter hours, wherever shorter hours do not imply industrial destruction, any scheme for their State institution must, indeed, seem unnecessary and absurd. Still, the socialism of working men leaders does not always stop short of absurdity. As to the agitation which is proceeding in operative circles upon the defeat of the Employers' Liability Bill, it, of course, involves a principle of the utmost importance to the metallurgical interests. But the destruction of, and even the antagonism to mutual, arrangements against injury, between employers and workmen, must have some effect in further fomenting the bad feeling of labour towards capital, which is one of the worst signs of the times. However, here, as in most other things, compromise may come to the aid of moderation on both sides.

RANDT MINING PROGRESS.

SINCE the Randt mining industry modestly came into existence, some seven years ago, its progress has been so rapid, and so continuously satisfactory, that it has not only taken its position in the front rank of the world's gold-producers, but it bids fair to out-distance all competitors in the very near future. Indeed, since the gold discoveries in Australia and in California, which were among the greatest events of the first half of this century, there has been no industrial development approaching in importance to that which has turned the attention of all thinking men to the Witwatersrand district; for not only has the output of the precious metal from that region increased by "leaps and bounds," but the potentialities of the Randt basin have been so clearly demonstrated that it is not unreasonable to anticipate even more substantial progress in the coming years, when the deep level properties begin to add their quota to the yield of the outcrop mines. In our view, the enormous productiveness of the Rand promises ere long to assist materially in the solution of the bi-metallic problem, and that would clearly entitle it to the gratitude of the commercial world at large, for the "battle of the standards" has become an intolerable nuisance. For the present, however, we must confine ourselves to what the Randt has done in the past, leaving the future to provide its own story, and this we are enabled to do conveniently and concisely by a reference to the annual report of the Johannesburg Chamber of Mines, the full text of which came to hand by the latest Cape mail. The document does not, it is true, contain very much information that our readers have not been already made acquainted with in a more or less general form; but it focusses that information in such a manner that the merest tyro in mining matters may readily appreciate the vast importance of the industry.

During 1893 the Randt mines produced a total of 1,478,477 ounces of gold, out of an aggregate output for the whole of the Transvaal of 1,610,335 ounces. This brings the yield of the Randt district up to 4,556,235 ounces from the commencement of regular crushings to the close of last year, and the following table will show at a glance how wonderfully production has increased year by year:—

Year.	Ounces.
1887	23,155
1888	208,122
1889	369,557
1890	494,817
1891	729,238
1892	1,210,869
1893	1,478,477

Compared with 1892, therefore, last year's yield exhibited an improvement of 267,601 ounces, or, roughly, 22 per cent. Of this increase the larger amount of tailings treated contributed 144,329 ounces more than in the preceding year, and concentrates yielded 22,378 ounces more, from which it will be seen what a very important part is now being played by the MACARTHUR-FORREST process. And upon that point we would incidentally express the hope that the quarrel which has sprung up between the mining companies, as represented by the Johannesburg Chamber of Mines, and the owners of the African patents in the MACARTHUR-FORREST process, may be adjusted upon equitable and amicable terms. The dispute can only be settled by a give-and-take policy. On the one hand, the process has undoubtedly been of immense service to the Randt industry, for by it a very large amount of gold has been successfully extracted at a profit, which, but for it, would have had to wait for some other scientific mode of treatment. But, on the other hand, it is contended that the rates or royalties charged by the African Gold Recovery Company are excessive, that the application of the process is frequently refused in an arbitrary manner, and that the the Transvaal mining laws provide that patents shall only be charged for upon a fair and moderate scale. Who is to decide such a knotty point if the two parties so deeply interested cannot arrive at an agreement? The case is essentially one for compromise, not for litigation.

The matter of paramount interest for Randt shareholders is the dividends paid, for though it is, of course, a grand thing to be associated with such an industry, the question of pounds, shillings, and pence, must dominate the action of investors generally. In this respect, then, the report of the Johannesburg Chamber of Mines is eminently satisfactory, for whereas in 1892 the dividends distributed absorbed £811,864, last year they amounted to no less than £1,100,203, the rates ranging from 5 per cent. in the cases of Langlaagte Royal, New Aurora West, and Vogelstruisfontein, to 120 per cent. in that of the Jubilee Company. The largest sum distributed was £217,500 in paying 8 per cent. upon the shares of the Robinson Company; but the 8 per cent. has to be multiplied by fifty to show what the original shareholders obtained last year. The most simple calculation, therefore, shows that upon the old capital basis, the Robinson proprietary last year received 400 per cent., which is not bad as things go. Next in importance is the Langlaagte Estate, which paid away in dividends £140,000, or 30 per cent.; then comes the City and Suburban with £85,000, or just 100 per cent.; and then the Nigel with £80,000, or 50 per cent.; followed by New Primrose with £78,567, or 40 per cent.; Durban Roodepoort with £68,750, or 55 per cent. Crown Reef with £60,000, or 50 per cent.; Ferreira with £45,000, or 100 per cent.; Geldenhuis Estate with £43,750, or 25 per cent., and so on, down to New Aurora West, whose 5 per cent. dividend absorbed £4000. Leaving the Robinson out of account, we find that the average dividend paid by the 25 companies which made distributions last year amounted to nearly 40 per cent. upon the nominal capital, and to about 20 per cent. on the gross returns, which is, of course, a very remarkable showing.

That most of the present dividend payers will go on improving their declarations, and that many of the mines which are not yet in the happy band will enter it in the current year, are eventualities well within the range of practical politics, for development operations are being steadily pushed forward, milling power is being increased, and though the costs of working are still higher than the easy nature of the ground seems to warrant, there is no reason to doubt that the economies already effected will become more marked. In short, it is obvious that with honest and capable management the Randt district will soon have left behind it in point of productiveness every other gold field in the world. For the current year the return is not likely to be much less than 2,000,000 ounces; probably it will exceed that figure, for well-informed experts look for a monthly output of close upon 200,000 ounces by the close of the first half of the year. That may be an over-sanguine estimate; but, be that as it may, there is ample justification in the progress of the principal companies for the increased attention which investors generally are giving to Randt shares; investors, not only in this country, but also, and more particularly, in Germany and France, where the facts and figures of the mines are studid more closely and more continuously than is the case here.

FOREIGN MINING PROGRESS.

A CONSIDERATION of the present position and prospects of certain important countries—notably Japan, South Africa, India, and Siberia—with regard to their mining and railway progress, and of the mutual inter-dependence of these two forms of material development, reveals features which should prove of an encouraging and stimulative nature. The future of coal mining in Japan is promising. Assuming the present annual average yield of Japanese coal to be 17,453,390 tons, and allowing for an annual increase at the rate of 13 per cent., it is calculated that by 25 years hence the yield from the present time will have aggregated 515,552,326 tons. Recent statistics, issued by the State Department, puts the capacity of the Japanese coal mines roughly at 759,720,000 tons. The proportion of minerals available for practical purpcses is, according to the experience of England, three-fourths of the total capacity. Thus the actual amount of coal which the mines may be expected to yield for use is 569,790,000 tons. If from this amount there is deducted the aggregate annual output for 25 years, there will remain only 54,237,674 tons. Clearly, the Japanese will do well not to use their mineral treasures wastefully; but experience in England and other countries has shown time after time how utterly impossible it is to form any reliable estimate upon the probable continuance of coal supplies. Another fact which should be noted in this connection is the manner in which the mining industry, when steadily pursued upon correct economic principles, has a tendency to expand and lead to the discovery and development of resources not previously known to be available. Certainly one of the best ways of conducing to such a state of affairs is to increase the railway facilities. The latest mail from the Orange Free State shows the principal topic of discussion there has reference to the Railway Convention concluded lately between Natal and the Transvaal from the extension of the Natal railway system from the border of that colony to Johannesburg and Pretoria. Opinion seems to be divided as to the wisdom of the course decided upon, some critics declaring that the representatives of the Natal Government have been so blinded by a jealousy of Cape Colony that they have allowed themselves to be over reached by the Transvaal Government. This view, however, is not general. The Cape Colony, by dint of energetic railway construction through the Free State, and by virtue of an agreement entered into with the Transvaal Government, has enjoyed for some 20 months past the enormous advantage of through railway communication with the Rand gold fields. Meanwhile, the Netherlands Railway Company, which owns a concession for the construction and working of all railways in the South African Republic, has been slowly progressing with the line from Delagoa Bay to the same rendezvous. Of course, the great object of all the lines interested has been as speedy and cheap a communication between the mining districts and the sea coast. There are five existing or possible routes from the sea board to Johannesburg. These are as follows:—(1.) From Cape Town 1013 miles; (2) from Port Elizabeth, 713 miles; (3) from Durban *via* the Free State, about 530 miles; (4) from Durban *via* Charlestown, about 454 miles; (5) from Delagoa Bay, 380 miles. The first and second of these routes are in working order; the third will be complete when a gap of some 150 miles has been filled up; and the fourth and fifth are in progress. The route from Cape Town is the natural route for mails and passengers to Europe, and for light goods of high value which will bear a comparatively high rate of carriage. The great bulk of the goods, and especially the mineral traffic, now goes by way of Port Elizabeth, the Cape Government conveying traffic at a rate of something under 2½d. per ton per mile as far as the Transvaal border, where the much higher rate of the Netherlands Company comes into force. As, however, this last rate applies only to about 50 miles of line, the Cape rate controls the position. Route No. 4 has been an object of great interest on all sides. The Cape Government has feared its competition because it is 200 miles shorter than No. 2 route; whilst the Netherlands Company, although they have still the advantage of a shorter distance by No. 5 route from Delagoa Bay, are yet anxious lest lower rates *via* Natal should rob them of their traffic. It is stated that the effect of the convention has been that while Natal, which has the longer route (No. 4) of the two shortest ones, is bound down to a minimum rate over its own system, the Netherlands Company (No. 5) can vary its rate at pleasure so as to meet the competition with the Cape Colony lines, whilst securing the right always so to fix the through rate from Natal as to give the Delogoa Bay line its fullest mileage advantage. The Transvaal negotiators have, moreover, managed to introduce a condition which practically prevents Natal from entering into any general Customs Union.

NOTES AND COMMENTS.

THE Easter holidays would seem to have imparted greater life and activity to business. Mining, especially—that is, from the investor's point of view—has benefitted from the few days' rest. During the past week more trade has been done and more buoyancy has been exhibited than has been the case during the last two years. Investors are directing their attention with renewed energy and with greater hopefulness to the mining market. Nor is there any evidence that this is but a rush and a spurt, to die out speedily. There has been no rush. On the contrary, it has all been done quietly, calmly, not breathlessly, as has happened more than once of late. No sign could be more hopeful; no feeling could exhibit more surely the quality of permanence, and this has been the prophecy put upon the phase of activity this week. The centre of attraction has naturally been South African gold shares. Brokers have had numerous and persistent orders from the public, and naturally they are in high glee. This is further evidence that there is no lack of money, but only of confidence, and that when the public do become convinced that a certain part of the world, or a certain property, contains within itself great potentialities for profitable working and production, they will not be slow to invest. All eyes are directed at this moment to two parts of the world—South Africa and Western Australia—and with reason, for here they can look forward with hope and confidence to the dividends they so earnestly desire.

THE report which will be placed before the shareholders of the Durban-Roodepoort Gold Mining Company, at the sixth ordinary general meeting of the company, to be held on Thursday, at Winchester House, can hardly occasion anything but satisfaction. One has a right to expect a good deal from a mine that in six years has paid dividends amounting to 170 per cent. These have been steadily maintained from one year to the other. For the 12 months under review the results will compare favourably with those of any preceding year. From the figures published in the report, it will be seen that the milling returns have been well maintained, and are even higher than those of the previous year, while the results of the cyanide process are highly satisfactory. So successful a present has not been compassed by any neglect of the future. Development, as the report points out, has been kept far in advance of the immediate requirements for milling, and even with what is now in sight a period of prosperity is assured to the company. The current year will see some considerable accessions to the present reduction plant. The results of the operations have been such as to warrant the construction of heavier stamping machinery, and by its aid the returns may be expected to increase. Coming at a time when the shares are selling at so improved a price, the report is an exceedingly satisfactory one, and may be expected to extend the confidence now reposed in the concern.

THE Almada and Tirito Company has not gone through a very successful year. The fact that there is a balance of expenditure for the 12 months, amounting to close upon £4879, is not likely to raise the hopes of either the shareholders or directors. As is usual in such cases, "exceptional causes" account for this, the principal being the falling off in the productive power of the mine, consequent upon the non-discovery of any further ore bodies. As this is a silver mine it has, of course, been greatly affected by the low price of that metal. Along with other similar concerns this has been a serious and depressing burden. As the directors in their report point out, this, coupled with the smaller output from the mine, and the difficulties inseparable from an inadequate water supply — the latter being consequent on the severe drought of the preceding years—caused the period under review to be one of great anxiety. The directors have tackled and minimised difficulties in the best way possible. In order to curtail the expenditure, and to make the mine as nearly self-supporting as possible, they have caused a great deal of exploratory work to be discontinued, and operations to be confined to the points offering the greatest chances of success. They also issued instructions to the superintendent to experiment upon the large accumulation of tailings on the dressing floors with a view to their profitable re-treatment. The result has justified their judgment and proved the wisdom of this, for financial assistance has been derived from the experimental treatment of these tailings. Improvements have also been effected in the mode of treating the ores, "with the result that the loss incurred for the past few months has been very small."

THERE are places on the property which prophecy improvements, and should, if other things are favourable, make the shareholders look to the future with some degree of hopefulness. For instance, in the Dios Padre section we are told the prospects continue favourable, indicating the probabilities of discoveries being made in this ground. From the present end of the 250 north, in which level a small shoot of ore was found in June last, there is still a distance of about 1000 feet to drive before the boundary will be reached, and this, the directors promise, will be pushed on with all possible speed, and they hopefully remark that, with the facilities afforded in this part of the mine for cheap working, a moderately productive lode could, even at the present low price of silver, be worked at a fair profit. Another point of great promise is the 20 fathom level north of the Tirito shaft, where the superintendent states there is a run of unexplored ground 700 feet long between the present end of the level and the Balvanera shaft, "and parallel with this drivage are the Virgin and Providencia ore shoots, which formerly proved a productive mineralised zone." The driving of this level was suspended last October, but will be resumed as soon as the financial position of the company will admit of it. Altogether, therefore, circumstances do not warrant discouragement.

THE North's Navigation Collieries Company appear to have come unscathed out of the year 1893, and all its difficulties. Notwithstanding the coal strike, and the determined opposition of some who took a different view of that important question than they, the directors have managed to pay a dividend of 10 per cent. upon the preference shares and of 5 per cent. upon the ordinary shares for the year, which is not so bad considering. A small but important paragraph in the report details the works of development which have been carried out during the period covered by the statement, and it is at once apparent that a continuous and vigorous policy has been adopted both by the board and the management under it. The great advance which has been made is best reflected in the remark that, whereas 1000 tons was the weekly average for the past year, it is expected and hoped that next year's average will at least be double that quantity. The united effect of the increase in the output and the decrease in the freight charges, hitherto a rather sore matter with the management, should be to enlarge greatly the returns of the company and to enable them to pay a higher dividend for 1894 than the one just declared. An enterprising Chairman, a strong board, and an able and vigorous management will work wonders.

NOTHING beyond the season of the severe depression which we have just passed through, and which is undoubtedly in great part referable to the greatest coal strike in the history of commerce, is necessary to make Englishmen aware of the evil effects arising from a huge disagreement between masters and men, but

if an additional lesson were needed, it would be furnished by the statistics we publish to-day, respecting America's output of coal. The influence exerted by this tremendous factor in the trade of the world is one of the most uncertain of things Speakers are continually deploring the fact, and as continually relegating to the domain of extreme hazard, anything which is largely dependent upon the action of America. If, however, where all is so uncertain there happens to be one single matter upon which the prophet can speak with some confidence, it is the coal question. We have had the unhappiness of verifying by personal experience what America can do in the region of silver, and before many years are passed we shall, perhaps, have a much more unpleasant experience of what our lively cousins can do in the coal trade. Unlike Mr. Micawber, they have the capital as well as the ability to embark in the trade. Nor do they stop here. Nature—perhaps the scientists will pardon us this personification—seems to have insisted upon doing everything in the American Continent upon a vast and imposing scale; and unless the abundance of the coal deposits there is of a kind to belittle our own coal fields to a discouraging extent, there will be a gross violation of the unities. What the falls of Niagara are to the falls of Norn, what the cyclones which sweep from the Hudson River to San Francisco are to the capsfull of wind which break over our East Coast, that may well be what the output of America may become to the output of England.

THE fact that the coal trade of West Virginia, which will probably be the chief coal-producing State of the future, has doubled within the past six years, should warn us that we are fighting no phantom, but a reality that will make itself felt, if not to-day, why then to-morrow or the day after. The fact lends additional importance to the sentences in which Professor Huntington warned the British race of their slowness of movement, and the necessity for organisation. Concerted action is a vital need unless we would lay up for a future generation a subordinate position in the world's trade, which will not be the less galling because its coming is long delayed. Every small disagreement which divides the working man from his employer is a playing into the hands of the commercial enemy. Happily there does not for the present at least appear to be much probability of a serious labour dispute. The committee, with Lord Shand in the chair, are going along together peacefully enough, sensible how much responsibility rests upon them, and how great a calamity it would be to England, and to the interests they represent, if an appeal were to be made again to what are merely the brute forces of money on the one hand, and numbers on the other. Every sincere friend of England will cordially hope for a maintenance of the unity of sentiment now prevailing among the representative committee.

WHILE America is most likely to be the largest competitor with Britain in the supply of coal, the Empire and the United States will not be left to fight alone for supremacy. The rapidity with which the coal industry in Ton-King is making its presence felt shows that the distribution of coal in the earth's crust is not confined to any very narrow limits. Geologists, indeed, never needed to be told this, but the fact just cited brings it home with greater force. Between San Francisco and Bangkok the coal from this new source has been used in ships, factories, and houses, and it appears that, despite some few special arrangements for stoking and for the furnaces, the Ton-King coal is making quick headway. If there be any satisfaction to be found in the fact that misfortune is common to many, the coal owners may reflect that the cotton spinners have the same reasons for jealously watching this new development as they themselves. Against disadvantages of a weak and unstable Government may be to get the cheapness of labour and good means of communication. Too much faith need not, however, be placed in these prophecies of evil. They have often been made before, and no serious injury has come from them. The danger is that the fancied security of a strong commercial position like that of Britain is apt to engender a certain relaxation of watchfulness, which is the best way to bring about the evils feared.

WE commented last week in these columns upon the fact that the Government of New South Wales had offered a reward of £1000 to the discoverer of a payable gold field. A man of by no means rare invention has claimed this sum, though he is not likely to get it. This gentleman has not found the desired field, but has invented a gold-saving appliance, which he thought would prove quite as valuable as a payable alluvial field. Commenting on this circumstance, the *Australian Mining Standard* remarks:—"There is no unreasonable sound about the claim of the inventive genius referred to, so far as the probable value of his appliance is concerned; but, however great a benefactor to mankind the gentleman in question may prove to be, he cannot have the faintest title to the £1000 granted for another specific purpose. A contemporary aptly remarks that the inventor of a new sausage machine might as reasonably claim a reward for the invention of an improved torpedo. We would suggest that the invention thus brought under their notice should not be lost sight of by the authorities, but that some of the experts connected with the Department might see how far the pretensions of the inventor are supported by practical tests of his apparatus. If the process of winning gold can be materially cheapened it will prove a priceless boon, not only to the colonies, but to all countries with gold within their borders; and, therefore, if there is anything in it, we should hear of the matter again, and that soon."

WHAT is regarded as an important discovery has been made at the Kilmore diggings, in Australia, by the use of the Government diamond drill. The miners of a lease of about 360 acres, having for some months worked the lead very successfully, had to abandon their operations on account of the lead dipping in a northerly direction and the flooding of the mine. After some delay, boring was commenced with the diamond drill. The first bore went down 87 feet without results, but the second one, which was put down 100 feet distant, about a quarter of a mile from the old workings, discovered the trend of the lead for a considerable distance, and at a depth of 129 feet bottomed in 2 feet of alluvial wash. This happy selection of a site was made last year by Mr. Reginald Murray, the Government geologist, in accordance with a theory, now confirmed, that the lead continues in a northerly direction. Some considerable excitement has been created in the locality by the discovery, for it is thought that an entirely new field will be opened for mining.

A REVIEW of the past quarter's work in the South Staffordshire coal and iron trades, though by no means highly encouraging, does not afford any ground for absolute despondency. Some of the facts to be gathered from the statistical reports are disagreeable enough, but there is yet ample room for that kind of hope which is sufficiently strong to inspire confidence. At first sight the indications would appear to be those of a moribund industry. Furnaces and forges are disappearing with alarming regularity, the cause in each case being the same—the impossibility of working them at a profit. About 6000 tons of pig iron is now produced weekly in South Staffordshire, a quantity barely half of the production of 30 years ago. Twenty years back, as was remarked the other day by the Chairman of the Mines' Drainage Commissioners, there were on the Birmingham Canal no fewer than 537 basins for the use of the ironworks and furnaces of South Staffordshire, while to-day there are only 436. The cutting off of five of these basins per annum for the past 20 years is an unpleasantly suggestive fact, which seems to be in a depressing harmony with the other facts quoted. This, however, is the darker side, and the picture is no exception to the law of the universal conjunction of opposites. While the South Staffordshire ironmaster may find it impossible to compete with his Belgian rival, this may not continue to be the case when the democratic movement on the Continent has made it impossible to pay a rate of wages which would not be tolerated in Britain. The vast natural resources of the district and its host of highly skilled workmen ensure that it will hold its own in producing the better classes of iron and steel, while the dimensions of the trade in finished goods are large enough to absorb all the raw material that may be produced there. These considerations and the progress recently made in economical production are more reassuring than the others were discouraging, and there is justification for the hope that South Staffordshire will rapidly adapt itself to changed conditions of trade and thrive again.

OUR CITY ARTICLE.

FRIDAY EVENING.

THE MINING MARKET.

A strong and hopeful week for Kaffirs.—A general improvement.—A better tone for Diamonds.—Indians and Miscellaneous active.

BUSINESS during the past week has been on a most active scale, and there is every cause for congratulation. The fact that there has been no rush, but that the buying has been steady and persistent, is a most hopeful sign. Indeed, it is the general opinion that a larger business has been done than for the past two years. It has not been confined to the professional element, but brokers have had their fair share of orders, and it would appear that at last the public are coming in as buyers of their various favourite stocks. The South African market, as usual, has attracted the greater degree of attention, though the Miscellaneous department has displayed a firm and buoyant tone. It would seem as if the public had woke up after the holidays; as if the few days of cessation from business had imparted a brighter and more hopeful aspect to things; or as if rest had given the energy and vigour so lacking in the mining market of late. We have had plenty of evidence of late that the investor is looking with great hope to South Africa. That this feeling is justified goes without saying, and the persistent and increasing evidence of its vast wealth should make this hopefulness permanent. The early part of Tuesday was mainly taken up with the carry-over arrangements, which were smoothly effected. A comparison of the making-up prices with those of the previous settlement showed a general and substantial rise in the South African department, the chief advances being as follows:—De Beers ¾, Jagers ⅝, Simmer and Jack 1 1/16, Rand Mines ⅞, Stanhope ⅝, City and Suburban ⅝, Robinson ½, Geldenhuis Estate 7/16, Geldenhuis Deep 7/16, Village Main 7/16, Crown Reef 7/16, Chimes 5/16, Durban 5s. 6d., Primrose ¼, Wolhuter ¼, Knight 4s. 6d., Consolidated Gold Fields nearly ½, Bantjes 4s., Glencairn 4s., Johannesburg Waterworks 2s. 1½d. On the other hand, slight declines were shown by Jubilee, Ferreira, and Orange Free State. Gold shares have come in for the greatest share of attention, and there have been advances in many instances. Chartered have also been strong throughout the week, whilst towards the close diamond shares exhibited conspicuous activity. On Thursday, owing to the improving position of the mine, Geldenhuis were the feature, the price jumping up ¼ to 5½ buyers. As has been already stated, Indian shares have displayed hopeful strength, Mysore, Mysore Reef, South-East Mysore, Nine Reefs, Nundydroog, and Ooregum improving. Amongst miscellanous securities, Aladdin have again been in good demand at 1¼ ex the dividend. With this distribution the company has returned 40 per cent. of its capital to the shareholders within 18 months. Columbian Hydraulic have likewise showed a hardening tendency. The directors have this week received the following cablegram of the result of run No. 192:—"We have cleaned up after a run of 44 days, during which time we have washed 820 hours. The gross returns are £3000; the net profit is £1750." A cablegram has been received from the Broken Hill Proprietary Mine stating that for the week ending the 22nd inst. 10,457 tons of ore were treated, yielding 916 tons of lead, containing 247,622 ounces of silver.

British Mines.

The Cornish market has been better this week, and some of the low-priced shares show a considerable rise, although the highest points touched have not been maintained in some instances. Carn Brea at 12¼ are steady. Cook's Kitchen are buyers at 20s. Dolcoath are in request at 76, and with large returns being made it is not likely that the price will recede. East Pool firm at 11, but with no disposition either to buy or sell. South Crofty are 3, and the outlook at the mine is very satisfactory. West Kitty are scarce at 7⅞. Wheal Agar are rather better at 2¼. The general outlook is encouraging, and with a little upward move in tin it looks as if all shares will command higher prices. Risen: Cook's Kitchen, 20s.; Dolcoath, £4 10s.; Killifreth, 5; South Condurrow, 10s.; South Crofty, 20s.; South Frances, 16s. 3d.; Tincroft, 30s.; West Frances, 17s. 6d.; West Kitty, 12s. 6d.; Wheal Agar, 10s.; and Wheal Grenville, 5s. Fallen: None.

South African Shares.

After the holidays a firm tone still characterised the Mining Market, and on Tuesday, when the carry-over had been effected, there was a general rise throughout this section of the market. The carry-over did not take long. No appreciable changes were shown, the terms being practically the same as those which prevailed on the last occasion. On Chartered there was a contango of 1½d. to 2d., and on Golds Fields of 2d. to 2¼d. De Beers and Jagers, and most of the Randt descriptions, were adjusted at from 5 per cent. to 10 per cent. Land securities participated but little in the upward movement. The principal gain—one of 1⅜—was shown in the case of Jagersfontein, which made up at 16⅝, as against 15¼. De Beers were ¾ higher at 16¼, as against 15½. Simmer and Jack were 1 1/16 higher, Rand Mines were 9⅜ as against 8½, and Rio Tinto carried over at 15½, as compared with 14⅜ last time. Stanhope gained ¾, Cities ⅝, Robinson ½, Village Main Reef 7/16, Consolidated Deep and El Callao ⅜, New Primrose, Mysore Gold, and Wolhuter ¼ each, and Consolidated Gold Fields 7-32. Minor advances were also registered in a number of other cases, hardly any share for which a free market could be found having failed to benefit from the more cheerful spirit which has come over the market. For the new account a good deal of business was transacted. In the Kaffir section a considerable degree of strength was shown, especial attention being given to Cities, Jumpers, Durbans, Geldenhuis Estate, Primrose, Langlaagte, Nigel, Simmer, Henry Nourse, Wemmer, and Wolhuter, all of which showed substantial improvements. Princess advanced to 1½, but May Consolidated showed a slight relapse. A firm tone distinguished Meyer and Charlton, Jumpers, and Stanhope, but Ferreira were again weaker. Diamond shares were animated, De Beers advancing ¼ and Jagers ⅜. Chartered rose ⅛ and Gold Fields 3/16. Land shares likewise showed a conspicuous revival, Exploration, Exploring, Bechs, Oceanas, and Zambesies all improving. Firmness continued in this department throughout Wednesday. On that day business extended in all directions. Wolhuters were in special demand, and rose ¼. A great deal of attention was devoted to Heriot, Meyer and Charlton, Champ d'Or, Crœsus, Geldenhuis Main Reef, George and May, Village Main Reef, Paarl Central, Kleinfontein, Knight, and Kimberley, Roodepoort, all improving. On the other hand, slight declines took place in the prices of Geldenhuis Estate, Robinson, Primrose, Durban, Simmer, and Stanhope. Princess relapsed ⅛, Africander 7/16, and Rand Mines ⅜. An extensive enquiry set in for Chartered, the price at one time going up to 32s. 6d., but realisation at the close brought about a small reaction to 32s. sellers, Consolidated Gold Fields were firm at a rise of 3-32, Exploring recovered ⅜, and Orange Free State ¼. Oceana, Bechuanaland, Exploration, and Gold Fields of Mashonaland all hardened. Silatis were firm at 4s. 3d. Sutherland Reefs were enquired for at about 4s. Amongst diamond shares De Beers advanced ⅛, but Jagers showed no change. On Thursday the brokers reported a further steady increase of their buying orders. As on the previous days the great attraction was the Kaffir market, the features of which were Geldenhuis and diamond shares. The price of the former went up ¼. Crowns advanced to 9 1/16, and Randt Mines to 9 1/16. Cities were unchanged. Slight improvements took place in Worcesters, Simmers, Nigel, Kleinfontein, and one or two others. There was a strong demand for Gold Fields Deep, the shares improving to 1 1/16 buyers. A slight reaction took place in Durbans, whilst relapses to a small extent were noted in Primrose, Stanhope, and May Consolidated. Meyer and Charlton were firm at 5⅛, Jumpers at 4 3/16 bid, and Robinsons at 5 1/16. De Beers, Jagers, Chartered and Consolidated Gold Fields attracted general attention. The first named advanced 13-32 and Jagers 7/16. To-day there is no change in the upward tendency, nor any sign that the improvement in business is but temporary. Risen:—Langlaagte Royal, 10s.; Luipaards Vlei, 1s.; May Consolidated, 2s. 6d.; Modderfontein, 6d.; Mozambique, 1s. 3d.; New Chimes, 6s. 3d.; New Crœsus, 1s. 3d.; New Jagers, 22s. 6d.; New Primrose, 1s. 3d.; Nigel, 6s. 3d.; Northern Transvaal Land, fully paid, 6d.; Oceana Development, 1s. 3d.; Oceana Land, 7s. 6d.; Otto's Kopje, 6d.; Princess Estate, 1s.; Randfontein, 6d.; Rand Mining, 10s.; Robinson, 7s. 6d.; Sheba, 2s. 6d.; Simmer and Jack (allowing for dividend), 2s.; South African Gold Trust, 3s.; Southern Land (15s. paid), 1s.; Spitzkop, 1s.; Stanhope, 5s.; Transvaal Exploration, 8s.; Transvaal Land (15s. paid), 6d.; ditto, fully paid, 6d.; United Langlaagte, 3s. 9d. United Roodepoort, 10s.; Van Ryn, 2s. 6d.; Village Main Reef, 5s.; Witwatersrand Knight's, 3s. 6d.; Wolhuter, 7s. 6d.; Worcester (allowing for div.), 2s.; Zambesia, 15s.; Balkis Land, 1s.; Bantjes, 2s.; Bechuanaland, 1s. 6d.; Block "B," 2s. 6d.; Buffelsdoorn, 6s.; Chartered, 4s. 6d.; City and Suburban, 5s.; Consolidated Deep Levels, 5s.; Consolidated Gold Fields, 7s. 6d.; Crown Reef, 2s. 6d. De Beers, 20s.; Durban, 5s.; East Rand, 1s.; Exploring, 15s.; Geldenhuis Deep, 2s. 6d.; Golden Estate, 5s.; George and May, 2s. 6d.; Glencairn, 4s. 6d.; Gold Fields of Mashonaland, 2s. 6d.; Gordon Diamond, 2s.; Grahamstown, 6d.; Henry Nourse, 2. 6d.; Johannesburg Trams, 1s. 6d.; ditto Water, 1s.; Jumpers, 2s. 6d.; Kleinfontein, 5s.; Langlaagte, 7s. 6d.—Fallen: Afrikander, 5s.; Agnes Block, 2s. 6d.: Booysen, Limited. 2s. 6d.; Edwin Bray, 6d.; Ferreira, 10s.; Nyassa, 1s. 3d.; Rietfontein, 2s. 6d.; Frank Johnson, 1s. 3d.

Dividends declared:—City and Suburban, 25 per cent.; Geldenhuis, 20 per cent.; Land and South African Exploration, 3s.; New Jagers, 5 per cent.; Nigel, 10 per cent.; Orange Free State, 12½ per cent.; Sheba, 6d.; Transvaal Coal Trust, 2½ per cent.

Indian and Miscellaneous Shares.

Although this section of the market displayed a fairly firm tone after the holidays, the improvement and buoyancy were not so conspicuous as in the South African department. Nevertheless, a fair amount of trade was transacted, resulting in improved quotations in some cases. Indian shares were more active, though the business done was not very considerable. Recoveries took place in Mysore Gold, Mysore Reefs, and Mysore Gold Fields. Amongst other descriptions, Tolima A recovered ½, whilst Broken Hill Props and De Lamar were a trifle better. On the other hand, Don Pedro and Colombian Hydraulic relapsed. Rio Tinto declined ½. On Wednesday a more active tone distinguished this market. Indians were strong. Champion Reef rallied 7/16, and Mysore Reefs 1s. 3d., while Ooregum were up to 4½ and Balaghat to 5s. 6d. Amongst other securities, Colombian Hydraulic improved 6d., whilst a slight improvement took place in Carrington, Elkhorn, and Palmarejo. On the other hand, De Lamar declined 1s. On Thursday, the miscellaneous shares displayed, if anything, more buoyancy than on the previous day. Once more Indian descriptions were firm

Champion Reef, Nundydroog, Ooregum, and Nine Reefs improving to a small extent. Aladdin recovered 1s., Poorman hardened to 6s. 6d., and Colombian Hydraulic to 16s. On the other hand, Don Pedro relapsed 1-32. This active business has continued throughout to-day, with a hopeful tendency. Risen: Balaghat, 6d.; Broken Hill Proprietary, 1s. 3d.; Burma Ruby, 6d.; Champion, 1s. 3d.; Kaboonga, 6d.; Kempinkote, 6d.; Mysore, 1s. 3d.; Richmond, 1s.; Rio Tinto, 11s. 3d.; Tharsis, 2s. 6d.; Victory, 9d. (allow div.); Waihi, 2s. 6d.—Fallen: Alamillos, 2s. 6d.; Coromandel, 1s. 6d.; De Lamar, 1s. 6d.; Don Pedro, 2s.; Golden Gate (Cal.), 1s.; Harquahala, 1s.; Jay Hawk, 6d.; Libiola, 2s. 6d.; Mysore Reefs, 2s.; New Guston, 1s.; New Queen, 6d.; St. John del Rey, 6d.; Sierra Buttes, 1s. Dividends declared: Aladdins Lamp, 1s.; Broken Hill Proprietary, 1s.; Brilliant, 3d.; Champion Reef, 2s.; Mill's Day Dawn, 6d.; Tharsis, 12½ per cent.; Victory, 6d.

COMPANIES AND THEIR DOINGS.

Reports, Balance Sheets, Dividends, &c., of Mining, Railway, Banking, and other Companies.

MINING COMPANIES.

The Durban-Roodepoort Gold Mining Company.

THE directors, in their sixth annual report, state the cash position on the 31st December was:—By investment in Cape 3½ per Cents., £10,000; gold in transit, £24,382 7s. 1d.; amount on deposit at London bankers, £10,000; account current, £51 9s. 9d.; ditto at Johannesburg, £419 3s.; cash in hand, £6 17s. 7d.; sundry debtors, £196 11s. 8d.; total £45,056 9s. 1d.; drafts in transit, £7650 17s. 3d.; sundry creditors, £12,652 9s. 2d.; dividends unclaimed, £3792 15s. 2d., leaving a credit balance of £20,960 7s. 6d. The sales of gold realised £215,577 18s. 1d. After allowing for all working expenses, including the cost of development and that of sinking the new main incline shaft, £106,559 12s. 3d. is carried to the credit of the profit and loss account. The sum of £27,526 4s. 8d. has been charged to depreciation account, leaving a net profit of £73,760 2s. 7d. This amount, plus the balance forward from 1892 of £15,926 6s. 2d., gives a total of £89,686 8s. 9d., out of which £68,750 has been paid in quarterly dividends, leaving a credit balance of £20,936 8s. 9d. carried forward to the current year. A dividend of 15 per cent. was paid on the 22nd inst., making a total of 170 5-6 per cent. paid during the six years' life of the company and represented by the sum of £191,333 6s. 8d. The quantity of payable ore developed and ready for stoping on the 31st December was estimated at 105,208 tons. During the current year it is intended to commence the erection of a new reduction plant on the northern boundary of the western block of claims, upon which block in the development of the deeper levels all future working will chiefly be centred. The plant will include stamps of a much heavier type than the present, capable of dealing more efficiently with the harder ore from the deeper levels, and of treating about 8000 tons per month. During the erection of this plant no interruption in the working of the present battery is contemplated. The directors desire to place on record the valuable assistance they have received from the Local Board and from the consulting engineer, Mr. G. A. Goodwin; and they have much pleasure in expressing their appreciation of the highly successful manner in which the manager, Mr. H. R. Skinner, has worked the mine. Mr. John Napier and Mr. Alfred Jones, the retiring directors, offer themselves for re-election.

The Brilliant Block Gold Mining Company.

The directors' half yearly report says:—The ordinary development of the mine was delayed for several weeks during the half year whilst a new skiproad was being laid down in the shaft and the brace altered at surface, but in spite of this and the heavy drainage of water a large quantity of ground has been opened in shafts, levels, and winzes. During the half-year, [comprised in the accounts, 4112 tons 17 cwts. of stone have been crushed for a yield of 3706 ounces 2 dwts. 15 grains of smelted gold, realising, with £130 5s. 9d. received from sale of tailings, £12,870 7s. 5d., and averaging 18 dwts. per ton. The value of the stone was thus £3 2s. 7d. per ton, and of the gold £3 9s. 5d. per ounce. A second dividend of £2500 has been declared. All additions and alterations to machinery and shaft, and all deadwork, have been paid for out of the revenue. There are 20 heads of stamps going, and the directors state that if No. 5 level keeps opening out as favourably as it looks at present, no difficulty will be experienced in raising sufficient stone to supply 20 heads during the current half-year. There is an uncalled capital amounting to £11,250, and a balance at the bank of £45 15s. Messrs. B. Toll and W. J. Paull, the retiring directors, offer themselves for re-election.

The Almada and Tirito Company (Limited).

The annual report of the directors of this company for the past year states:—The expenditure and receipts account shows a balance of expenditure for the year of £4878 12s. 11d. This result is due in some measure to exceptional causes, but principally to the falling off in the productive power of the mine consequent on the non-discovery of any further ore bodies. The exchange accounts have contributed greatly to the large amount standing to the debit of the profit and loss account, of which £2750 7s. 7d. represents the depreciation during the 12 months in the value of the balance of assets in Mexico on December 31, 1892, and £1516 1s. 1d. the balance of the exchange adjustment account written off in accordance with a resolution passed at the last general meeting. The continued decline of the price of silver throughout the year, coupled with the smaller output from the mine and an inadequate supply of water, were sources of great anxiety to the directors. In order to curtail expenditure a good deal of exploratory work was discontinued, and operations were confined to points offering the greatest chances of success. Experiments on the re-treatment of the tailings showed the practicability of turning them to good account, and financial assistance has since been derived from this source. Improvement also in the treatment of the ores have lessened the loss incurred during the past few months. In the Dios Padre section the prospects are favourable. From the present end of the 250 north, in which a small shoot of rich ore was found in June last, there is still a distance of about 1000 feet to drive before the boundary will be reached. Another point of great promise is the 20 fathom level north of the Tirito shaft, where there is a run of 700 feet of unexplored ground between the present end of the level and the Balvanera shaft. In September last the 20 end north again improved and carried a large and kindly-looking lode of green ore, yielding 35 ounces of silver to the ton. The more extensive trials recommended by Mr. Samuel Gifford, after his inspection of the property last year, cannot, of course, be carried out at present, but it is hoped the time is not far distant when at least a portion of this work may be undertaken. The outlay during the past two or three years in laying open the mines for more rapid and economical development, with the continued improvement in the surface operations, and the lower wages paid, will enable the company in future to reap a greater benefit from any discoveries which may be made. Mr. Henry Swaffield, the retiring director, offers himself for re-election.

Wigan Coal and Iron Company.

The report by the directors for the half-year ended December states that the output and sales were very materially diminished, owing to the colliers having struck against a reduction in their wages. Prices were entirely abnormal, owing to the output being stopped throughout the district. The colliers ceased work on July 28, and resumed on November 20. It was arranged that work should recommence on the old terms, and no change should be made in wages between the settlement and February 1. The ironworks were stopped for the greater part of the time during which the strike lasted, and trade was still very dull and unprofitable, although the furnaces were stopped for so many weeks. The steelworks were also stopped during the greater part of the strike and up to the end of the year. Trade was so dull and prices so unprofitable that it was not possible to resume work at the close of the strike except at a heavy loss. The trade had continued in a very bad state. The accounts showed a profit of £12,326 on the whole operations of the company. The sum of £7901 was brought forward from last half-year, making together the sum of £20,227 available for dividend. A dividend after the rate of 2 per cent. per annum, free of income-tax, was recommended. This will absorb £18,097, leaving £2130 to be carried forward. According to the auditors' statement, £21,412 was deducted for depreciation, whilst the additions to plant amounted to £8507. The debenture debt was reduced by £5000. A dividend was paid during the half-year, absorbing £22,621, which, deducted from the disposable balance of June 30, left £7901 to be brought forward.

Stanhope Gold Mining Company.

The company has found it impossible to arrange for an exclusive crushing from the main reef. During March, however, it was intended to divide the crushing so that one-half should be from the main reef and one-half from the usual source. When the cable announcement of March results is received shareholders, with this information before them, will be able not only to account for any decrease in the total, but to some extent to assess the value of the main reef itself.

The Paarl Central Gold Mining and Exploration Company (Limited).

The accounts for the half year to December 31 show a loss of £15,474, increasing the debit balance to £20,370. This result is due to the fact that no milling operations were carried on during the six months, while £11,194 was spent on the mine. The balance shows £28,493 of loans to the company, a cash overdraft of £19,337, bills payable £3787, and other creditors £9609, while there are debtors for £1056, and cash and stores in hand total £861. In December the company obtained a guarantee for an overdraft of £30,000 at 8 per cent. interest. At the close of 1893, 62,620 tons of ore were developed.

The Balaghat Mysore Mines (Limited).

All transfers of shares in the Balaghat Mysore Gold Mines (in liquidation) entitling approved transferees to apply for an allotment of shares in the new company must be lodged at the company's office on or before the 3rd day of April, 1894, after which the allotment will take place.

— The address of the RIPANJI QUICKSILVER AND SILVER MINES COMPANY (LIMITED) is now 120, Bishopsgate-street Within, E.C.

— The directors of the CITY AND SUBURBAN GOLD MINING COMPANY (LIMITED) have declared a dividend of 25 per cent. less income tax, payable to all shareholders registered on the 30th March. The dividend will be paid in South Africa at the end of April, and in London at the end of May.

— The directors of the NIGEL GOLD MINING COMPANY (LIMITED) have declared a dividend of 10 per cent., less income-tax, payable to all shareholders registered on the 29th March. This dividend will be paid in South Africa at the end of April, and in London at the end of May.

— The London agents of the JUMPERS GOLD MINING COMPANY (LIMITED) notify that the warrants in payment of dividend No. 5, declared payable to all shareholders on the register of 20th January last, were posted on the 28th March, from their London office, 29 and 30, Holborn Viaduct, E.C., to European shareholders.

— The directors of the WEST PRUSSIAN MINING COMPANY, Limited, have declared an interim dividend on the Prepreference, Preference, and Ordinary shares, at the rate of 8 per cent. per annum for the past three months.

— The ELKHORN MINING COMPANY, Limited, has produced 10,373 ounces bullion in the mill for the week ending March 24.

— The directors of the THARSIS SULPHUR AND COPPER COMPANY (LIMITED) announce a dividend of 12½ per cent. for 1893, as against 15 per cent.; for depreciation £47,000 is written off, and £14,000 carried forward. £57,000 was written off, and £19,000 carried forward for the previous year.

— A call of 50 per cent. is due to-day on issue of £250,000 of the CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA 5½ per Cent. First Debentures.

— A dividend of 5 per cent. is declared by the directors of the NEW JAGERSFONTEIN MINING AND EXPLORATION COMPANY (LIMITED) for the quarter ending March 31.

— The board of the STAR OF THE EAST (MURCHISON, WEST AUSTRALIA) has declared a dividend of 1s. per share.

— A call, payable by 23rd April, is announced of 6d. per share on the 25,000 shares (second issue) of the VICTORIA (LONDON) MINING COMPANY (LIMITED) upon which 17s. has been previously called up.

— The coupons due 1st April of the ROSARIO NITRATE COMPANY, together with the bonds drawn on the 1st inst. of the 5 per cent. debenture bonds, will be paid on and after 2nd April (Saturdays excepted) at the offices of the company.

— The usual dividend of 8 per cent. per annum on the preference shares of the BLOCK B LANGLAAGTE ESTATE GOLD MINING COMPANY (LIMITED) has been declared for the year ended 31st January last, and cheques for the same have been posted.

— The secretary of the ISLE OF MAN MINING COMPANY (LIMITED) sold this week 100 tons of this company's ore, at £7 3s. 6d. per ton.

— Mr. A. M. Womble left by the *Roslin Castle* last Saturday for the Cape, en route to the Transvaal, where he is due to inspect several mining properties on behalf of a wealthy British syndicate.

DURING the second half of 1893 the Roodepoort United Main Reef Company made a profit of £1115, but it is stated that present results are much more encouraging, and that the effects of the development of the mine will not be fully felt until 1894. No allowance has been made for depreciation. The Chairman thinks that the liabilities will be cleared off by the end of this month.

THE METAL MARKETS.

LONDON METAL MARKET.

THE METAL MARKET—LONDON, MARCH 30.

Copper.

THE G.M.B. market during the present week has been, on the whole, quite lacking in life; the tone has been dull, and transactions have been comparatively meagre, whilst values have given way again. The opening business was in sharp cash at £41 7s. 6d., and three months at £41 17s. 6d., but the latter position touched £41 12s. 6d. before the close on Tuesday. Wednesday's business was quiet at £41 1s. 3d. to £40 15s. s.c. On Thursday £40 17s. 6d. and £40 18s. 9d. were the ruling values of spot, and to-day, after this position had again touched £40 18s. 9d., the value declined, and the market closed dull at £40 15s. to £40 16s. 3d. s.c., and £41 5s. to £41 6s. 3d. three months. No business in furnace material has been advised.

Tin

opened firm with £70 5s. paid for three months Straits, and rose to £70 12s. 6d., whilst s.c. touched £69 15s. Tuesday closed, however, flat at about 10s. below the best. Wednesday brought a further falling off in values, three months in seller's option touching £68 5s., and three months fixed, £69 2s. 6d. On Thursday spot first gave way to £68 2s. 6d., but the market stiffened again, and £68 7s. 6d. was paid. The transactions for the three days averaged 225 tons per day, but Friday's market was very quiet, though fairly firm in tone, and we closed at £68 7s. 6d. to £68 10s. s.c., and £69 5s. to £69 7s. 6d. three months. Billiton opened at 42½ fl s.c., and closes at 41¾ fl, with three months at 42 fl.

Pig Iron.

The Glasgow Market opened at 42s. 11½d. s.c.; Scotch rose to 43s. 2d. It closes steady at 43s. ½d. buyers. Hematite is quoted 45s. 3½d., and Middlesbro' 36s. 3d.

The shipments from Scotland last week are advised as 5404 tons, or 2016 tons under those of the same period of last year.

Lead

has been exceedingly quiet this week, and there is really no feature worthy of record.

The close is dull at £9 2s. 6d. to £9 5s. soft foreign, and £9 5s. to £9 7s. 6d. English.

Spelter

closes a shade firmer in tone, with a trifle more demand. The final prices are £15 12s. 6d. to £15 15s., ordinaries, and £15 15s. to £15 17s. 6d. specials.

Antimony

is dull at £35 10s. to £36.

Quicksilver

is quiet at £5 10s. firsts, and £5 9s. 6d. seconds.

The following are to-night's (March 30) prices of metals;—

	£ s. d.	£ s. d.
Copper.		
Tough cake and ingot	41 2 6	41 12 6
Best selected	44 0 0	45 15 0
Sheets and sheathing	51 0 0	52 0 0
Flat bottoms	54 0 0	55 0 0
Chili bars (spot, & 3 months respectively)	40 15 0	41 5 0
Good merchantable, (spot, & 3 months respectively)		
Copper tubes, seamless	——	0 0 7¾
Alloys.		
BRASS: Wire	——	0 0 5¾
,, Tubes (solid drawn)	——	0 0 5¾
,, Sheets	——	0 0 5¾
PHOSPHOR BRONZE: Alloys II. (Cog Wheel Brand)	——	88 0 0
,, ,, III. or V. (Cog Wheel Brand)	——	93 0 0
,, ,, VII. (Cog Wheel Brand)	——	95 0 0
,, ,, XI.	——	90 0 0
,, ,, Vulcan brand A1 B.C.	80 0 0	85 0 0
DURO METAL	80 0 0	85 0 0
BULL'S METAL	——	70 0 0
Ferrobronze (Vivian's).		
Ingots ...per lb.	0 0 5¾	——
Ordinary sheets, plates, bolts and bars	0 0 6¾	——
Screw bolts and nuts	0 0 8¼	——
Pump rods, plain	0 0 7¾	——
,, finished	0 0 10¼	——
DELTA METAL: No. 4 (per ton)	——	73 10 0
,, Sheets and plates (per lb.)	0 0 10½	——
,, Bars, round, square, flat (per lb.)	0 0 9¼	——
,, ,, hexagon (per lb.)	0 0 9	——
Tin.		
English, ingots, f.o.b.	73 5 0	73 15 0
,, bars	74 5 0	74 15 0
,, refined	75 5 0	75 15 0
Straits, spot and 3 months respectively	68 7 6	68 5 0
Australian spot, and three months respectively	68 17 6	69 15 0
Banca ,, (in Holland)	74 5 0	74 7 6
TIN PLATES: Charcoal, best quality ...per box	0 16 0	0 18 0
,, ,, ordinary	0 14 0	0 15 6
,, Coke, best quality	0 11 3	0 11 9
,, ,, ordinary	0 10 3	——

These prices of tinplates are f.o.b. at Swansea: at Liverpool 6d. per box more.

Iron.		
Pig, G.M.B., f.o.b., Clyde, spot	——	2 3 0¾
,, Scotch pig, No. 1 Gartsherrie	——	2 11 6
,, ,, Coltness	——	2 16 6
,, ,, Clyde	——	2 9 6
,, ,, Govan	——	2 4 6
Bars, Welsh, f.o.b. Wales	——	5 5 0
Plates ,, ,,	——	6 5 0
Bars, Staffordshire, at works	——	5 10 0
Sheets ,, ,,	——	6 15 0
Plates ,, ,,	——	6 10 0
Hoops ,, ,,	——	5 12 6
Ship plates, Middlesborough	——	4 17 6
STEEL: English spring... nominal (according to quality)	11 0 0 ... 38 0 0	20 0 0 ... 42 0 0
,, ,, cast ...		
,, Rails at works, according to section	3 12 6	4 10 0
Lead.		
Spanish or soft foreign	9 2 6	9 5 0
English pig, common	9 5 0	9 7 6
,, L.B.	——	9 15 0
,, sheet and bar	——	10 7 6
,, pipe	——	10 17 6
,, red	——	12 2 6
,, white	——	16 10 0
,, patent shot	——	13 15 0
Spelter.		
Silesian ordinary brands	15 12 6	15 15 0
,, special brands	15 15 0	15 17 6
English Swansea	16 5 0	16 7 6
Sheet Zinc	18 10 0	19 0 0
Antimony.		
Antimony	35 10 0	36 0 0
Quicksilver.		
Flasks, 75 lbs. warrants	5 10 0	5 9 6
Manganese.		per unit.
Ore, c.i.f., U.K. ports		
1st quality, 50 per cent. and upwards	0 0 11	0 1 0
2nd ,, 47 per cent. to 50 per cent.	0 0 10	0 0 11
3rd ,, 40 ,, 47 per cent.	0 0 9	0 0 10
Aluminium.		Per lb.
98-99½ per cent. (guaranteed 98 per cent. min.)	In ingots (1 cwt. lots)	0 2 0
do do	(5 cwts. and up)	0 1 11
Nickel.		
98-99 per cent. guaranteed	0 1 7½	0 1 8¾

T. B. BROWNE'S ADVERTISEMENT PRESS DIRECTORY.—The appearance of the 1894 issue of Mr. T. B. Browne's Advertisement Press Directory and Newspaper Gazetteer, shows that its originators are bent upon losing none of the prestige which has attached for years to the work. Not only is it a stupendous mass of informations indicated by the title, but it has been got up in a manner to attract the interest and attention of the ordinary individual. One of the principal impressions conveyed by the book is that advertising has been carried to a high art. Without pausing to enquire whether the association of charming pictures with soap and pills is an advantage or the reverse, the ingenuity exercised in the choice may be freely admitted. The production in miniature of fac-similes of the front pages of most of the well-known papers and periodicals is carried out here on a much larger scale, and with much greater elaboration and finish than we ever saw before. Altogether the volume quite maintains the reputation already established by the publication, and reflects great credit upon those who are responsible for its appearance.

"THE MINING JOURNAL" SHARE LIST.

ABBREVIATIONS AND REFERENCES.—The following are the significations of the abbreviations and references which occur in the Share List:—*Ay*, Antimony; *A*, Arsenic; *Bl*, Blende; *Bx*, Borax; *C*, Copper; *D*, Diamond; *G*, Gold; *I*, Iron *L*, Lead; *M*, Mundic; *N*, Nitrates; *P*, Phosphates; *Q*, Quicksilver *R*, Ruby; *S*, Silver; *S-l*, Silver-lead; *Sul*, Sulphur; *T*, Tin; and *Z*, Zinc. * in the "called up" column of British Mines, signifies that the mine is conducted on "Cost Book" principles: ‡ in the "Head Office" column of African Mines, signifies that the address given is not that of the head office, but of a sub- or transfer office and †, following the names of African mines, signifies that they are subject to the Limited Liability Law of the South African Republic.

The following is by far the most complete and comprehensive list of mines, in whose shares business is being currently transacted, published. Additions will be made from time to time as occasion requires. Every effort is made to ensure accuracy, and Secretaries of Companies, Share dealers, and our readers generally, are cordially invited to co-operate with us to this end, by notifying us of any errors that may at any time occur. We desire it to be understood that, while our Share List will almost invariably be found correct; we do not hold ourselves responsible for any loss or inconvenience that may arise from possible inaccuracies.

BRITISH MINES.

Name	Closing Price, Mar. 30, 1894.	Closing Price, Mar. 22, 1894.	Par. £ s.	Latest Dividend	Called up Per Share. £ s. d.	Shares Issued.	Situation of Mine.	Head Office.
Atlas ......T	—	—	1 0	—	0 12 6	12,000	Devon	Camborne.
Blue Hills ......CT	1/- 3/-	3/-	*	2/- May '81	6 11 6	6,000	Cornwall	Camborne.
Botallack ......T	—	—	*	—	51 4 6	2,220	Cornwall	St. Just.
Carn Brea ......T	12 12¼	12¾	*	2/6 Dec.,'93	21 5 0	6,000	Cornwall	Carn Brea.
Cook's Kitchen ..T	20/- 30/-	7/6	*	—	29 5 4	4,900	Cornwall	Camborne.
Cumberland L	—	—	1 0	5% May, '88	1 0 0	55,000	Cumberland	7, Angel-court E.C.
Cwmystwyth	—	—	1 0	—	1 0 0	5,000	Cardigan	
Derwentwatr. CLZ	—	—	1 0	—	1 0 0	10,000	Cumberland	Manchester.
Devon Gt.Cons. CA	15/- 20/-	22/6	5 0	3/- Nov. '93	2 0 0	10,240	Devon	8, Finsbury-circus.
Dolcoath ......T	75½ 76½	75½	*	5/- Jan. '94	9 12 6	4,700	Cornwall	Camborne.
Drakewalls CTM	—	—	1 0	—	1 0 0	100,000	Cornwall	Dashwood House.
East Blue Hills T	—	—	*	—	1 18 3	4,183	Cornwall	79¼, Gracechurch-st.
East Grassington L	—	—	1 0	—	1 0 0	20,000	Yorkshire	Palmerston-building
East Pool ......AT	10¾ 11¼	11¼	*	5/- Oct. '93	0 9 9	6,400	Cornwall	Illogan.
Gawton ......CA	—	—	50/-	—	2 7 0	12,000	Devon	20, Great St. Helens.
Great Laxey L	2 3	3	4 0	5/- Apr.,'92	4 0 0	15,000	Isle of Man	Douglas, Isle of Man.
Green Hurth ...L	—	—	1 0	-/6 June '89	0 19 0	32,000	Cumberland	Newcastle.
Halkyn L	—	—	1 0	2/- Sep. '93	1 0 0	10,000	Flintshire	Chester.
Hexworthy ......T	—	—	1 0	—	1 0 0	18,335	Devon	6, Queen-street-place
Isle of Man L	—	—	5 0	5/6 Sep. 93	5 0 0	14,000	Isle of Man	Chester.
Killifreth ......T	3⅝ 3⅞	2¾	*	3/6 Dec. '93	5 6 3	6,000	Cornwall	Truro.
Kingside ......LB	—	—	1 0	3/- May, 1892	1 0 0	15,919	Cardiganshire	6 Queen-street-place
Lead Hills L	17/6 22/6	22/6	6 0	3/- Sep. '92	6 0 0	20,000	Lanarkshire	30, Finsbury-circus.
Levant ......CT	—	—	*	10/- Aug.,'93	11 9 6	2,500	Cornwall	Penzance.
Lovell ......T	—	—	*	1/3 Nov.,'91	1 16 7	7,165	Wendron	3, Gt. Queen-st.,S.W.
Minera (New) ...L	—	—	5 0	3/- Mar. '90	5 0 0	9,000	Denbighshire.	Minera, N. Wales.
Nenthd & Tyndle. LZ	—	—	1 0	6% Feb.,'91	0 18 6	48,875	Northumberld	Newcastle-on-Tyne
New Ballswidd'n T	—	—	1 0	—	1 0 0	50,000	Cornwall	St. Clement's Ho.,E.C
New Cooks Kitn. TC	—	—	*	—	10 18 3	4,900	Cornwall	Camborne.
Pedn-an-drea ...T	—	—	*	—	4 3 6	7,000	Cornwall	Redruth.
Phœnix United TC	6/- 7/-	7/-	*	1/- Mar. '90	6 9 9	12,000	Cornwall	Liskeard.
Polberro & Trev. T	—	—	*	—	1 11 6	18,000	Cornwall	37, Walbrook.
Prince of Wales TC	2/- 3/-	3/-	10/-	—	—	—	Cornwall	6, Draper's-gardens.
Roman Gravels L	—	—	10/-	—	—	—	Salop	11, Queen Vic.-st.,EC
Rushen L	—	—	1 0	5% Sept. '91	1 0 0	26,131	Isle of Man	Douglas.
So. Condurrow TC	10/- 20/-	10/-	*	3/6 Apr. '93	7 12 1	6,123	Cornwall	20, Great St. Helens
South Crofty TA	2¾ 3¼	2⅜	*	—	16 16 6	6,120	Cornwall	Pool, Cornwall.
South Darren ...L	—	—	—	—	—	—	Cardiganshire	8A, Austin Friars.
South Frances ...T	17/6 22/6	—	*	—	18 1 0	4,500	Cornwall	Redruth.
Tincroft ......T	12½ 13	12½	*	3/- Dec. '93	15 7 6	6,000	Cornwall	Carn Brea.
Weardale L	—	—	4 0	1/3 Oct. '90	1 5 0	50,000	Durham	3, Lombard-court.
West Frances ...T	1¾ 2	1⅜	—	2/6 May,'89	15 15 1	6,144	Cornwall	Camborne.
West Kitty ......T	7⅜ 7⅝	7⅜	*	4/- Jan. '94	0 12 0	6,000	Cornwall	37, Walbrook.
Wheal Agar ...TA	2 2¼	2¼	*	2/6 Aug. '88	22 0 8	6,000	Cornwall	Redruth.
Wheal Basset ...TC	3 3½	3½	*	10/- Apr.'88	12 0 10	6,144	Cornwall	Redruth.
Wheal Friendly ..T	2/- 4/-	4/-	*	—	0 11 3	10,000	Cornwall	37, Walbrook, E.C.
Wheal Grenville T	14 15	15	*	3/- Feb. '94	17 10 0	6,000	Cornwall	7, Union-court, E.C.
Wheal Kitty ......T	7/6 12/6	12/6	*	3/- Mar. '88	7 9 6	4,295	Cornwall	Truro.
Wheal Metal & F. T	—	—	*	—	0 13 9	10,784	Cornwall	79¼, Gracechurch-st

AUSTRALIAN AND NEW ZEALAND MINES.

Name	Closing Price, Mar. 30	Closing Price, Mar. 22	Par.	Latest Dividend	Called up	Shares Issued	Situation	Head Office
Achilles Gld Fld.	2 2¼	2¾	1 0	—	1 0 0	80,307	New Zealand	3, Church Pas., E.C.
Aladdins Lamp G	1 11/16 1 13/16x	1⅞	1 0	1/- Mar. '94	1 0 0	100,000	N S Wales	4-6, Throg. Avenue.
Anglo-Saxon ...G	—	—	1 0	2/- July, '89	1 0 0	51,000	Queensland	4, Lombard-court.
Australasian ......G	2/- 2/6	2/9	1 0	-/6 Mar.,'92	1 0 0	210,000	Queensland	6, Queen-st. place
Australian C	—	—	20 0	1/6 Aug. '93	7 7 6	18,315	So. Australia	15, Old Jewry Chbrs
Aus. Bro. Hill Con.	1/3 1/9	1/9	1 0	1/- June, '91	1 0 0	540,000	N. S. Wales	Winchester House.
Blue Spur & G. G	-/6 1/-	1/-	1 0	—	1 0 0	75,926	New Zealand	6, Gt. St. Helens'
Bonnie Dundee G	3/3 3/9	3/3	1 0	—	0 18 0	120,000	Queensland	3-5 Gracechurch-st
Brilliant Block ...G	1 1/16 1 5/16	1 5/16	2 0	—	2 0 0	250,000	Queensland	3, Gracechurch-st.
Brit. Brok. Hill S	2/- 3/-	3/-	5 0	—	5 0 0	240,000	N. S. Wales	Abchurch Chambers.
Broken Hill Prop.	2⅝ 2⅜	2 5/16 xd	8 0	1/6 Dec. '93	0 8 0	960,000	N. S. Wales	Abchurch Chambers.
Carrington ......G	2/- 3/-	2/6	12/6	—	0 12 6	100,000	Queensland	9, Tokenhouse Yard.
Coromandel ......G	5/16 ⅜	⅜	1 0	—	0 12 6	95,000	India	6-7, Queen-street-pl.
Craven's Cal.	3/- 4/-	3/6	6 0	-/3 Nov. '93	0 4 8	100,000	Queensland	30-1, S Swithin's-la.
Croydon King Blk.	—	—	5/-	—	0 5 0	80,000	N. Queensland	Leadenhall Blg. E.C.
Cumbrind (New) G	-/6 1/-	1/3	1 0	2/6 Dec. '87	1 0 3	200,000	Queensland	Blomfield House.
Day Dawn B.&W. G	4/9 5/3	5/3	1 0	-/6 Mar. 93	1 0 0	498,400	Queensland	3-5, Gracechurch-st
Day Dawn P. C. G	4/9 5/3	5/3	1 0	-/6 Apr. '92	1 0 0	490,000	Queensland	Winchester Ho.,E.C.
Eaglehawk ......G	1/- 1/6	1/6	1 0	—	0 18 6	120,000	Victoria	31, Lombard-street.
Etheridge ......G	—	—	5 0	—	0 5 0	324,790	Queensland	6-7, Queen-street-pl.
Golden Gate ......G	1/- 1/6	1/6	10/-	—	0 10 0	150,000	Queensland	9, Tokenhouse Yard
Glenrock	2/6 3/-	3/-	1 0	—	0 19 6	225,000	N. Zealand	3-5, Queen-st. E.C.
Harrietville ......G	—	—	1 0	-/6 July, '90	1 0 0	146,330	Victoria	6-7, Queen-street-pl.
Kaboonga ......G	1/9 2/-	1/10½	10/-	—	0 10 0	500,000	Queensland	30, St. Swithin's-la.
Kangarilla ......S	-/9 1/3	1/3	1 0	—	1 0 0	88,275	So. Australia	68, Coleman-street.
Kapanga ......G	-/9 1/-	1/-	1 0	-/6 Jan. '91	0 18 9	250,000	N Zealand	9, New Broad-street
Kilkivan	—	—	1 0	—	1 0 0	120,000	Queensland	4, Coleman-street.
Midas G. P. ...G	—	—	1 0	—	1 0 0	180,000	Victoria	32 Poultry, E.C.
Mills' Day Dawn G	1 5/16 1¼xd	1¼ xd	1 0	-/6 Feb. '94	0 15 9	300,000	Queensland	3, Gracechurch-st.
Mornya ......GS	—	—	1 0	—	1 0 0	58,235	N. S. Wales	16, St. Helen's-place.
Mosman ......G	4/3 4/9	4/6	1 0	-/3 Jan. '94	1 0 0	185,000	Queensland	3-5, Gracechurch-st.
Mt. Leyshon ...G	1/- 1/6	—	1 0	-/6 Dec. '90	1 0 0	157,989	Queensland	7, Draper's-gardens.
Mountain Maid C	1/6 2/6	2/6	10/-	—	0 6 3	56,000	Queensland	Leadenhall Bldgs.
Mt. Morgan Ex. G	2 1/16 2 5/16xd	2 5/16 xd	5/-	—	0 2 0	180,000	Queensland	4, Tokenhouse Bldgs
Mt. Shamrock GB	—	—	1 0	—	1 0 0	275,000	Queensland	13, Basinghall-st E.C
Mount Zeehan......	-/6 1/-	1/-	1 0	—	1 0 0	193,257	Tasmania	Mansion Ho. Cham.
New Queen ...G	8/9 9/3	9/3	1 0	-/6 Feb. '94	0 19 6	158,915	Queensland	30, St. Swithin's-la.
Port Phillip ......G	—	—	5 0	—	0 5 0	200,000	Victoria	57, Moorgate-st.,E.C.
Queen's Bthdy Un	—	—	1 0	—	0 10 0	—	Victoria	7-8, Gt. Wnchster St.
Queens. Smelting	1/16 5/16	⅜	1 0	—	1 0 0	36,244	Queensland	9, Tokenhouse Yard.
Scottish Australian	⅜ ⅜	⅞	1 0	—	1 0 0	200,00	N.S. Wales	Winchester Ho. E.C.
Sunburst	—	—	10/-	-/6 Mar. '92	0 10 0	150,000	Queensland	9, Tokenhouse Yard.
Tasmanian Crown	—	—	1 0	—	1 0 0	175,000	Tasmania	8, Old Jewry, E.C.
Tipperary	—	—	1 0	—	1 0 0	35,000	N. Zealand	3-5, Queen-st., E.C.
True Blue	1/6 2/6	2/6	1 0	—	1 0 0	53,000	Australia	Leadenhall Blg. E.C
Victoria......	—	—	1 0	-/6 Mar. '94	1 0 0	144,000	Char. Towers	32, Gresham-st., E.C.
Victory ......G	9/16 11/16 xd	12/6	5 0	—	0 5 0	200,000	Queensland	32, Gresham-st, E.C
Waihi ......G	1 5/16 1 5/16	1 5/16	1 0	1/- Jan. '94	1 0 0	150,000	New Zealand	11, Abchurch-ln. E.C
Wentworth Ord. G	5/6 6/6	6/6	1 0	6/- Jan. '93	1 0 0	500,000	N. S. Wales	4-6, Throgmort. Ave

INDIAN AND ASIATIC MINES.

Name	Closing Price, Mar. 30	Closing Price, Mar. 22	Par.	Latest Dividend	Called up	Shares Issued	Situation	Head Office
Balaghat Mysore G	5/6 6/-	5/3	1 0	—	1 0 0	160,000	India	6-7, Queen-street-pl.
Burma Ruby ......R	6/3 6/9	7/-	1 0	—	0 17 0	300,000	Burmah	Suffolk House, E.C.
Champion Reef ...G	3 11/16 3 13/16	3¾	1 0	—	1 0 0	200,000	India	6-7, Queen-street-pl.
Colar Central ...G	-/4½ -/7½	-/7½	1 0	—	1 0 0	200,000	India	Dashwood Ho., E.C.
Coromandel ......G	5/16 ⅜	⅜	1 0	—	0 12 6	120,000	India	6-7, Queen-st.-place.
Devala Moyar ...G	—	—	1 0	—	1 0 0	200,000	India	34, Nicholas-lane.
Gemming & Mining	—	—	2 0	—	1 7 6	24,456	Ceylon	183, Gresham House.
Gold Flds Mysore G	24/- 24/6	24/6	1 0	1/- July '92	1 0 0	220,000	India	6-7, Queen-street pl.
Gold Flds Siam G	—	—	1 0	—	1 0 0	150,000	Siam	19, St. Swithin's-lane.
Hyderabad Dec.	—	—	10 0	—	10 0 0	1,000,000	Deccan	16, St. Helen's-place.
Kempinkote Gd Fd	1/9½ 1/10½	1/6	5 0	—	0 3 0	698,650	India	6-7, Queen-st.-place.
Mysore ......G	3⅜ 3¾	3 9/16	1 0	3/- Mar. '94	1 0 0	225,000	India	6-7 Queen-street pl.
Mysore Reefs ...G	11/- 12/-	10/6	1 0	—	0 19 0	200,000	India	6-7, Queen-street-pl.
Mysore West ...G	3/6 4/-	4/-	1 0	—	1 0 0	130,000	India	Dashwood Ho., E.C.
Mysore Wynaad G	1/3 1/9	2/-	1 0	—	1 0 0	250,000	India	Dashwood Ho., E.C.
Nine Reefs ......G	2/3 2/9	1/6	10/-	—	0 10 0	250,000	India	6-7, Queen-street-pl.
Nundydroog ......G	1¼ 1⅜	1⅜	1 0	1/- Mar. '94	1 0 0	200,000	India	6-7, Queen-street-pl.
Ooregum (Df. O.) C	4⅞ 5	4 13/16	1 0	3/6 Dec. '93	1 0 0	145,000	India	6-7, Queen-street-pl.
Do. (10% Pref.).	5⅜ 5⅝	5⅝	1 0	3/6 Dec. 93	1 0 0	120,000	India	6-7, Queen-street-pl.
Pahang Corpn. ...	2/6 3/6	3/6	1 0	15% Apr. '89	1 0 0	200,000	Malay Penin.	Blomfield Ho., E.C.
Pahang Kabang...	—	—	1 0	—	1 0 0	394,740	Malay Penin.	4a, Jeffrey's sq., E.C.
South E. Mysore G	5/3 5/9	5/9	4/-	—	0 3 9	133,074	India	6-7, Queen-street-pl.
Springdale......	2/6 3/-xd	3/- xd	4/-	16⅔% Dec. '93	0 4 0	200,000	India	20, Abchurch n. E.C

EUROPEAN MINES.

Name	Closing Price, Mar. 30	Closing Price, Mar. 22	Par.	Latest Dividend	Called up	Shares Issued	Situation	Head Office
Alamillos L	10/- 15/-	15/-	2 0	1/6 Mar. '92	2 0 0	25,000	Spain	6, Queen-street-place
Argentella C	—	—	1 0	—	1 0 0	133,165	Corsica	16, Philpot-lane.
Bratsberg C	—	—	1 0	—	0 18 0	120,000	Norway	1, Gresham-buildings
English Cr. Spelter	⅜ ⅞	⅞	1 0	5% Dec. '92	1 0 0	84,000	Lombardy	9, Queen-street-place
Fortuna L	⅜ ⅞	⅞	2 0	1/3 Mar. '92	2 0 0	25,000	Spain	6, Queen-street-place
Libiola C	3 3¼	3⅜ xd	5 0	2/6 Sept. '93	5 0 0	60,400	Italy	Dashwood Ho., E.C.
Linares L	3⅜ 3⅜	3⅜	3 0	5/- Sep. '93	3 0 0	15,000	Spain	6, Queen-street-place
Marbella I	61/- 62/-	61/-	10 0	6% Aug. '91	10 0 0	26,000	Spain	78, Queen Victoria-st
Mason & Barry ...C	42/6 47/6	47/6	5 0	2/- May. '93	5 0 0	185,172	Portugal	87, Cannon-street.
Oscar ......G	—	—	5 0	—	0 4 6	117,240	Norway	6A, Austin Friars.
Pestarena ......G	1/6 2/-	2/-	3 0	—	3 0 0	67,709	Italy	6-7, Queen-street-pl.
Pontgibaud L	10 12	12	20 0	12½% Dec. '92	20 0 0	14,000	France	6-7, Queen-street-pl.
Rio Tinto C	15 9/16 15 11/16	15 9/16	10 0	7/- Nov. '93	10 0 0	325,000	Spain	30, St. Swithin's-lane
Do. (Mort Bonds)	104 105	104½	100 0	5% Jan. '91	100 0 0	2,158,960	Spain	30, St. Swithin's-lane
Do. (2nd do.)	102½ 103	102	100 0	5% Jan. '91	100 0 0	1,127,180	Spain	30, St. Swithin's-lane
Sipanji ......SQ	6/- 8/-	7/6	1 0	—	0 13 0	85,000	Servia	Liverpool.
Tharsis ......C Sul	4⅞ 5⅛	5	2 0	15% Apr. '93	2 0 0	625,000	Spain	Glasgow.
West Prussian Pre.	10 10¾	10¾	10 0	8% Jan. '93	10 0 0	5,450	Germany	Walbrook Ho., E.C.
West Prussian Or.	15 16	16	10 0	8% Jan. '93	10 0 0	14,060	Germany	Walbrook Ho., E.C

NORTH AMERICAN MINES.

Name.	Closing Price, Mar. 30, 1894	Closing Price, Mar. 22, 1894.	Par. £ s.	Latest Dividend.	Called up per Share. £ s. d.	Shares Issued.	Situation of Mine.	Head Office.
Almada and T. ..S	-/3 -/9	-/9	2/6	—	0 2 6	351,008	Mexico	6, Queen-street-place
American Belle...S	1/3 1/9	1/9	1 0	-/6 Mar. '91	1 0 0	400,000	Colorado	25A, Old Broad-street.
Big Creek	—	—	1 0	1/- Dec. '91	1 0 0	80,038	Nevada	2, Pancras-lane, E.C.
California	—	—	10/-	-/6 May 90	0 8 9	129,771	Colorado	St. George's Ho E.C.
Canadian Phos. P	⅜ ½	⅜	1 0	-/6 Nov. '90	1 0 0	73,334	Canada	155, Fenchurch-st.
Chiapas	—	—	1 0	—	1 0 0	221,876	Mexico	33, Broad-st. Av. E.C.
Colorado Silver...S	—	—	1 0	—	1 0 0	112,491	Colorado	Abchurch-chbrs. E.C.
Cortez	—	—	1 0	3% Feb. '93	1 0 0	300,000	Nevada	Suffolk House, E.C.
De Lamar.. ......GS	19/6 20/6	21/6	1 0	1/- Jan. '94	1 0 0	400,000	Idaho	6, Draper's-gardens.
Dickens Custer GS	— -/3	-/3	1 0	—	0 19 9	420,000	Idaho	Winchester Ho. E.C.
Elkhorn ......S	9/6 10/6	10/6	1 0	-/9 Mar. '94	1 0 0	175,007	Montana	6, Draper's-gardens.
Emma ......S	-/3 -/6	-/6	5 0	—	0 5 0	367,788	Utah	15, Geo-st, Mansn. Ho
Flagstaff ......S	-/3 -/6	-/6	1 0	—	0 18 3	240,000	Utah	Dashwood Ho., E.C.
Garfield ......GS	—	—	1 0	-/6 Dec. '88	0 19 6	98,185	Nevada	Suffolk House, E.C.
Golden Feather G	6/6 7/6	7/3	1 0	—	1 0 0	180,000	California	St. Stephens Cs E.C.
Golden Gate......	5/6 6/6	1/6	1 0	—	0 19 0	79,600	California	St. Stephens Cs E.C.
Golden Leaf ......G	-/9 1/3	1/-	1 0	—	1 0 0	100,253	Montana	8, Draper's Gardens.
Golden Valley...G	—	—	1 0	—	1 0 0	55,507	Colorado	15, Angel Court.
Harquahala ......G	17/6 18/6	19/6	1 0	—	1 0 0	30[illegible],000	Arizona	6, Draper's Gardens.
Holcomb Valley G	-/9 1/-	-/10½	5 0	-/9 Oct. '93	0 5 0	300,000	California	14, Cornhill, E.C.
Idaho ......GS	-/9 1/-	-/10½	1 0	—	0 4 8	143,439	Idaho	140, Leadenhall-st.
Jackson Goldfields	—	—	5 0	—	0 5 0	408,635	California	6, Drapers' Gardens.
Jay Hawk ......G	6/6 7/6	7/6	1 0	-/6 Dec. '92	1 0 0	285,000	Montana	Dashwood House.
Kohinoor "B" GS	—	—	1 0	-/6 June '81	1 0 0	112,971	Colorado	Blomfield Ho., E.C.
La Plata ......S	-/6 -/9	-/9	5/-	1/3 Oct. '89	0 4 3	405,000	Colorado	11, Poultry, E.C.
Maid of Erin	—	—	1 0	4c. pab Mar.'94	1 0 0	575,000	Colorado	43, Threadneedle-st.
Mammoth Gold ...	—	—	1 0	—	1 0 0	400,000	Pinal Arizona.	257, Winchester Ho.
Mesq. d'l Oro (P) G	⅝ 1	1	5 0	—	5 0 0	10,000	Mexico	Dashwood Ho., E.C.
Mesq. d'l Oro (O) G	¼ ⅜	⅜	5 0	—	5 0 0	10,000	Mexico	Dashwood Ho., E.C
Montana	5/9 6/3	6/3	1 0	5% April '91	0 19 0	660,000	Montana	Gresham House, E.C
New Colorado	—	—	1 0	—	0 17 0	65,000	Colorado	Abchurch Cham E.C
N. Consolidated SC	—	—	1 0	—	1 0 0	160,000	Eberhardt, U.S	19A, Coleman-street.
N. Eberhardt ......S	—	—	5/-	—	0 3 6	248,576	Nevada	15, Angel-court, E.C.
N. Gold Hill ......G	—	—	1 0	—	0 19 9	191,045	N. Carolina	15, George-st., E.C.
New Guston ......S	6/- 7/-	7/-	1 0	1/- Oct. '92	1 0 0	110,000	Colorado	25A, Old Broad-st.
New London	—	—	2/6	—	0 2 6	327,816	New Carolina	55, Bishopsgt.-st. Wn
N. Hoover Hill.. G	—	—	10/-	-/9 Dec. '85	0 10 0	120,000	N. Carolina	Langthorne Ho., E.C
Palmarejo ......GS	1/6 2/-	1/9	1 0	—	1 0 0	48,888	Mexico	4, Copthall-buildings
Pinos Altos......GS	2/- 2/6	2/6	1 0	-/6 Mar.' 90	1 0 0	300,000	Mexico	110, Cannon-street.
Pittsburg Con. G	—	—	1 0	1/6 Mar. '88	1 0 0	77,147	Nevada	Suffolk House, E.C
Poorman Con.......	5/9 6/3	6/6	5/-	—	0 5 0	273,948	Idaho	5, Copthall-bgs. E.C
Red Mountain ...S	—	—	1 0	—	1 0 0	46,6[illegible]6	Colorado	11, Poultry, E.C.
Richmond ...GSL	¼ ½	½	5 0	1/- Sep. '93	5 0 0	54,000	Nevada	44, Coleman-street.
Ruby ......GSL	—	—	5/-	—	0 5 0	211,371	Nevada	22 St. Mary Axe.
Sierra Butte ...G	9/- 11/-	11/-	2 0	-/6 Oct. '93	2 0 0	122,500	California	138, Leadenhall-st.
Do. Plumas Eur. G	12/6 15/6	15/6	2 0	-/9 Oct. '93	2 0 0	140,265	California	138, Leadenhall-st.
Springdale......G	2/6 3/-xd	3/- xd	$1	16⅔% Dec. '92	$1	1,000,000	Colorado	20, Abchurch Lane.
United Mexican S	1/- 1/6	1/6	1 0	2/6 May, '87	1 0 0	906,654	Mexico	3, Gt. Winchester st.
Viola (New)......	—	—	1 0	—	1 0 0	150,000	Idaho	Broad-st. House, E.C.

SOUTH AND CENTRAL AMERICAN MINES.

Name	Closing Price, Mar. 30	Closing Price, Mar. 22	Par.	Latest Dividend	Called up	Shares Issued	Situation	Head Office
Antio. (Pref.) G.S.	—	—	1 0	-/6 Mar. '90	1 0 0	22,458	Colombia	184, Gresham House
Antioquia (ordiny)	—	—	1 0	—	1 0 0	42,453	Colombia	184, Gresham House
Callao Bis. ......G	-/9 1/3	1/3	1 0	—	1 0 0	320,000	Venezuela	50, Old Broad-street.
Camarones C	⅛	⅛	2 0	—	2 0 0	67,000	Chili	123, Bishopsgt. Wn.
Caratal ......G	-/4 -/6	-/6½	2 6	—	0 2 4	657,326	Venezuela	57, Moorgate-st. E.C
Colon ......G	-/6 1/-	1/-	1 0	—	1 0 0	200,000	Colombia	5, Copthall-bdgs., E.C.
Colorado Nit. ...N	3⅜ 3⅝	2⅞	5 0	7/6 May, '89	5 0 0	32,000	Chili	12, King-st., Liverp'l.
Colombian Hy.. G	15/6 16/6	16/-	1 0	1/- Dec. '93	1 0 0	75,000	Colombia	10, Blomfield-street.
Copiapo C	1¾ 1⅞	1⅞	2 0	2/- Dec. '93	2 0 0	100,000	Chili	Dashwood House, E.C
Darien......G	—	—	1 0	—	1 0 0	71,359	Colombia	Manchester.
Don Pedro......G	4/- 5/-	7/-	1 0	—	1 0 0	133,102	Brazil	24-5, Devonsh. Cs. E.C
El Callao ......G	1⅜ 1⅜	1¼	5 0	2 frc. Nov.,'90	5 0 0	257,600	Venezuela	8, Bishopsgt.-st, Wn.
Frontino & B....G	19/- 20/-	20/-	1 0	1/6 Dec. '93	0 19 6	128,662	Colombia	184, Gresham House.
Glenrock ......G	2/6 3/-	3/-	1 0	—	0 19 6	199,948	Argen. (& Ind)	3-5, Queen-street, E.C
Glenrock (Pref.)..	—	—	1 0	—	0 16 0	16,232	Argen. (& Ind)	3-5, Queen-street, E.C
Gravel......G	5/3 5/9	5/-	1 0	—	0 19 0	100,000	Colombia	10, Blomfield-street.
Javali ......G	—	—	2/-	8⅓% '91	0 2 0	105,234	Nicaragua	139, Cannon-street.
Julia Nit. ......N	3/- 5/-	5/-	5 0	—	5 0 0	22,000	Chili	79¼, Gracechurch-st.
Lautaro ......N	3⅜ 3⅝	3½	10 0	10/- Sep. '89	10 0 0	25,000	Chili	70, Gracechurch-st.
Liverpool ......N	—	—	5 0	15/- Aug '89	5 0 0	22,000	Chili	Liverpool.
Loma ......G	-/9 1/3	—	1 0	—	1 0 0	300,000	Colombia	5, Copthall-buildings
London Nit. ......N	—	—	5 0	30% Feb. '89	5 0 0	10,000	Chili	9, Gracechurch-st.
London Nit. (Pref.)	—	—	5 0	18% Feb. '89	5 0 0	22,000	Chili	9, Gracechurch-st.
Macate	2/6 3/-	3/-	2/-	—	0 1 0	—	Peru	11, Old Broad-st, E.C
Orita ......G	2/3 2/9	2/9	1 0	1/- April '89	1 0 0	30,000	Colombia	10, Blomfield-street.
Ouro Preto ......G	—	—	1 0	—	0 18 6	80,000	Brazil	6, Queen-street-place
Panulcillo C	—	—	2 0	1/- Nov. '89	2 0 0	117,500	Chili	13, Great St. Helens
Primitiva ......N	5⅛ 5⅜	5⅜	5 0	2½% Oct. '89	5 0 0	40,000	Chili	Liverpool.
Quebrada......C	11/16 13/16	13/16	3 0	5% Mar. '92	3 0 0	306,447	Venezuela	38, Nicholas Lane.
Rosario ......N	3¾ 4	4⅜	5 0	2½% Oct. '90	5 0 0	80,000	Chili	57¼, Old Broad-street.
Rosario (6% Deb.)	—	—	100 0	—	100 0 0	649,200	Chili	57¼, Old Broad-street.
St. John del Rey G	19/6 20/6	20/6	1 0	10% June '82	1 0 0	269,912	Brazil	28, Tower-chmbrs. E.C
San Donato ......N	2 2¼	2¼	5 0	—	5 0 0	32,000	Chili	12, King-st., Liverp'l.
San Jorge ......N	6¼ 6½	6⅜	5 0	10/- May '92	5 0 0	75,000	Chili	9, Gracechurch-st.
San Pablo ......N	4¼ 4½	4⅜	5 0	5% Nov. '89	5 0 0	32,000	Chili	3, Gracechurch-st.
Santa Barbara ...G	10/-	10/-	1 0	1/3 Dec. '86	1 0 0	30,000	Brazil	Liverpool
Santa Luisa ......N	—	—	10 0	10/- Sep. '89	10 0 0	22,000	Chili	70, Gracechurch-st.
Santa Rita ......N	3¾ 4	3¼	5 0	3/- Jan., '93	5 0 0	20,000	Chili	Dashwood House, E.C
San Sebastian ...N	1⅜ 1⅜	1⅜	5 0	10/- Sep. '89	5 0 0	29,000	Chili	Dashwood House E.C
Segovia ......G	—	—	5 0	—	0 4 0	160,000	Colombia	5, Copthall-buildings
Tetuan ......G	—	—	1 0	—	0 19 6	200,000	Colombia	5, Copthall-buildings
Tolima......S	-/7½ -/8	-/7½ xd	5 0	10/- Mar. '94	5 0 0	20,000	Colombia	18, Finsbury-circus.
Vic. & Altamira ...	10/-	10/-	1 0	—	1 0 0	200,000	Venezuela	Broad-st. Avenue.
W. Argentine ...G	1/6 2/-	2/-	1 0	—	0 19 0	150,000	Argentine	3-5, Queen-street.
West Indian......G	—	—	5/-	—	0 5 0	700,000	San Domingo	49, Queen Victoria-st.
Zaruma ......G	—	—	5/-	—	0 5 0	261,422	Ecuador	1, Gt. Winchester-st.

AFRICAN MINES.

Name	Closing Price, Mar. 30	Closing Price, Mar. 22	Par.	Latest Dividend	Called up	Shares Issued	Situation	Head Office
Africkander......G	⅜ ⅞	1	1 0	—	1 0 0	40,000	Transvaal	19, St. Swithin's lane
Agnes Block......G	½ ⅝	⅝	1 0	—	1 0 0	78,507	Transvaal	54, Old Broad-street.
Aurora ......G	7/16 9/16	9/16	1 0	5% Mar. '93	1 0 0	65,000	Witwatersrdt.	Johannesburg.
Aurora West, New G	1/16 3/16	3/16	1 0	5% Mar., '93	—	85,000	Witwatersrdt.	1, Crosby Square.‡
Aurum......G	—	—	1 0	—	—	75,000	Witwatersrdt.	32, Holborn Viaduct.
Balkis Land ......G	2/9 3/3	2/9	10/-	—	0 10 0	520,000	Transvaal	85, Gracechurch-st.
Banket......G	-/9 1/3	1/3	1 0	—	1 0 0	200,000	Witwatersrdt.	Johannesburg.
Banties Reef ......G	11/16 ¾	15/6	1 0	—	1 0 0	83,000	Witwatersrdt.	Warnford-court.‡
Barrett (New) . G	2/9 3/3	3/-	1 0	—	0 9 0	235,358	De Kaap	17, Basinghall-street
Bechuanaland Exp.	1⅜ 1 5/16	22/6	1 0	—	1 0 0	200,000	Bechuanaland	19, St. Swithin's-lane.
Blaauwbank Un. G	—	—	1 0	—	1 0 0	79,500	Witwatersrdt.	Johannesburg.
Cape Copper C	1⅜ 1½	1½	2 0	1/3 June '93	2 0 0	345,000	Cape Colony	9, Queen-street-place.
Cen. Montrose... G	2/- 3/-	3/-	1 0	—	1 0 0	149,000	—	10, Throgmorton Av.
Champ d'Or......G	⅜ ⅞	⅜	1 0	—	1 0 0	275,000	Witwatersrdt.	8, Old Jewry, E.C.
City and Suburb. G	13 9/16 13 11/16	13⅝	1 0	25% Sep. '93	1 0 0	80,000	Witwatersrdt.	1, Crosby Square.‡
Coetzeestroom ...G	—	—	5 0	—	0 4 6	140,000	De Kaap	105, Leadenhall-street
Con. Bultfontein D	26/6 27/-	27/-	1 0	5% Nov. '89	1 0 0	721,500	Griqualand W	62, Lombard-st.
Con. Deep Levels G	1 15/16 2 1/16	2	1 0	—	1 0 0	187,250	Transvaal	30, St. Swithin's-lane.
Crœsus (New) ...G	1⅜ 1¼	1 1/16	1 0	5% May,'92	1 0 0	35,000	Witwatersrdt	66, Gresham-street.
Crown Reef ......G	9½ 10	9 15/16	1 0	25% Oct. '93	1 0 0	120,000	Witwatersrdt.	23, Austin Friars.‡
De Beers Consol. D	18⅜ 18⅝	15⅜	5 0	12/6 June '92	5 0 0	789,791	Transvaal	62, Lombard-street.
Do. 5¼% 1st Deb.	105 106	106	—	—	—	—	—	—
Do. 5¼% 2nd Deb.	104¼ 105½	105⅛	—	—	—	—	—	—
Durban Roodept. G	5 13/16 6	6	1 0	2/- Mar '93	1 0 0	125,000	Witwatersrdt.	28, Leadenhall-bldgs
Edwin Bray ......G	—	—	1 0	—	1 0 0	64,925	De Kaap	23, College-Hill.
Evelyn ......G	—	—	1 0	10% Jan. '89	1 0 0	66,000	Witwatersrdt.	28, Old Jewry, E.C.
Ferreira ......G	7⅜ 7¼	7¾	1 0	60% July, '91	1 0 0	45,000	Witwatersrdt.	29, Holborn Viaduct.‡
Forbes Reef ......G	-/9 1/3	1/3	1 0	—	1 0 0	420,000	De Kaap	45-6, Leadenhall-st.
Geldenhuis Deep G	3⅜ 3 3/16	3 5/16	1 0	—	1 0 0	265,000	Transvaal	30, St. Swithin's-lane.
Geldenhuis Est. G	5 3/16 5 5/16	5	1 0	10% Mar. '93	1 0 0	187,500	Witwatersrdt.	29 & 30, Hol. Viaduct.
George and May...	25/- 27/-	23/6	1 0	—	—	105,000	Witwatersrdt.	Warnford Court, E.C
George Goch ...G	—	—	1 0	—	1 0 0	100,000	Witwatersrdt.	Johannesburg.
Glencairn ......G	1⅜ 1 13/16	1 11/16	1 0	—	1 0 0	200,000	Witwatersrdt	2, Drapers-gardens.
Gold Estates T....G	3/6 4/6	4/6	1 0	15% Dec. '89	0 10 0	130,000	Transvaal	46, Queen Victoria-st
Grahamstown .. G	8/9 9/3	9/3	1 0	—	1 0 0	150,000	Witwatersrdt.	14, Throgmorton-st.
Graskop ......G	-/9 1/3	1/3	0 5	2½% Mar. '92.	0 4 6	500,000	Lydenburg	85, Gracechurch-st.
Great Britain ..G	—	—	1 0	—	1 0 0	170,000	Witwatersrdt.	Warnford-court.
Griqualand W....D	6 9/16 6 11/16	6½	10 0	—	10 0 0	105,700	Transvaal	62, Lombard-street.
Henry Nourse ...G	2⅜ 2 13/16	2 13/16	1 0	—	1 0 0	100,000	De Kaap	Warnford-court.‡
Heriot (New) ...G	3⅜ 3 11/16	3½	1 0	—	—	85,000	Witwatersrdt.	1, Crosby Square.‡
Hill's Waterfall..G	—	—	1 0	—	0 16 8	83,334	De Kaap	3, Lothbury, E.C.

"THE MINING JOURNAL" SHARE LIST (African Mines continued).

Name.	Closing Price, Mar. 30, 1894.	Closing Price, Mar 22, 1894.	Par.	Latest Dividend.	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.
			£ s.		£ s. d.			
Joe's Luck.....G	1/6 2/6	2/6	1 0	—	1 0 0	57,404	De Kaap	11, Queen Vic.-st.
Jubilee .....G	5⅛ 5⅛	5⅝	1 0	30% Oct. '93	1 0 0	30,000	Witwatersrdt.	8, Old Jewry.†
Jumpers .....G	4⅛ 4¾	4¾	1 0	10% Jan. '93	1 0 0	100,000	Witwatersrdt.	29, Holborn Viaduct.‖
Kleinfontein . G	£17⅛ 19⅛	—	1 0	—	1 0 0	150,000	Witwatersrdt.	8, Old Jewry.
Klerksdorp ....G	1/6 2/6	2/6	1 0	—	1 0 0	100 000	Transvaal ...	110, Cannon-street.
Knight .....G	18/6 19/6	18/6	1 0	—	1 0 0	250,000	Witwatersrdt.	19, Bury-street, E.C.
Langlaagte Est. G	4⅛ 4⅛	4⅛	3 0	20% July, '92	1 0 0	467,000	Witwatersrdt.	59, Holborn Viaduct.‖
Lisbon-Berlyn .. G	2/9 3/-	3/-	2 6	—	0 1 8	883 233	Lydenburg ...	110, Cannon-street.
Luipaards Vlei Est.	11/6 12/-	11/6	1 0	6% Mar. '90	1 0 0	344,093	Witwatersrdt.	8, Old Jewry.
Main Reef .....G	1 1⅛	—	1 0	—	1 0 0	300,000	Witwatersrdt.	Warnford-court.‖
Manica Ophir	—	—	1 0	—	1 0 0	96,000	Mozambique.	2, Pinner's Court.
May Consol. .....G	12/- 12/6	12/6	1 0	—	1 0 0	430,000	Witwatersrdt.	4, Lothbury.‖
May Deep Level G	8/- 9/-	8/-	1 0	—	1 0 0	146,000	Witwatersrdt.	31, Cornhill, E.C.
Metropolitan ... G	1⅛ 1⅝	1⅜	1 0	—	1 0 0	75,000	Witwatersrdt.	1, Crosby Square.‖
Meyer & Charl....G	5¼ 5⅛	5⅛	1 0	25% Dec. '93	1 0 0	71,687	Witwatersrdt.	Warnford-court.‖
Mitchell .....G	—	—	1 0	—	1 0 0	45,000	Witwatersrdt.	Kimberley.
Modderfontein.. G	7/3 7/9	7/6	1 0	—	1 0 0	200,000	Witwatersrdt.	Warnford-court.‖
Moodies G.&E....G	7/6 8/6	8/6	1 0	-/4 May '90	1 0 0	240,000	De Kaap	8, Old Jewry.‖
Moodies (15/- p.)G	2/6 3/6	3/6	1 0	—	0 15 0	120,000	De Kaap	8, Old Jewry.
Namaqua C	15/- 20/-	20/-	2 0	2/6 July '91	2 0 0	194,351	Namaqualand.	34, Leadenhall-bldg.
New Chimes..... G	1⅝ 1¾	1½	1 0	—	1 0 0	70,000	Witwatersrdt.	8, Old Jewry, E.C.
New Cœsus..... G	1⅝ 1⅞	1⅞	1 0	5 % Aug. '92	1 0 0	195,000	Langlaagte	4, Bishopsgt.-st. Wt.
New Jagersf. ...D	16¾ 16⅝	15½	10 0	—	10 0 0	100,000	Transvaal	5, Copthall-buildings
New Primrose ...G	4⅝ 4¾	4⅝	1 0	4/- July, '93	1 0 0	230,000	Witwatersrdt.	2, Draper's-gardens.
Nigel .....G	3⅛ 3⅜	—	1 0	10% Dec. '93	1 0 0	160,000	Witwatersrdt.	1, Crosby-square.
Noitgedacht E. G	—	—	1 0	—	1 0 0	160,000	Lydenburg ..	8, Old Jewry.
Oceana	2⅝ 2⅛ xd	2¼	1 0	25/- Nov. '89	1 0 0	150,000	Transvaal	4, Sun Court, E.C.
Ophir Concess. ...	-/6 1/-	1/3	1 0	—	0 18 6	111,857	E. CoastAfrica	31, Lombard-street.
Orange F.S.E. ...D	3⅝ 3⅞	3¾	1 0	—	1 £ 0	284,000	OrangeF.State	10, Moorgate-street.
Oriental .....G	1/6 2/-	2/-	1 0	—	1 0 0	448,450	De Kaap	Jamaica-bgs.Cornhill
Otto's Kopje.....D	1/9 2/3	1/6	1 0	—	0 19 3	500,000	Kimberley ...	110, Cannon-st.,E.C.
Pearl Central... G	⅞ 15/16	⅞	1 0	—	1 0 0	138,750	Transvaal	29-30, Hol. Via., E.C.

Name.	Closing Price, Mar. 30, 1894.	Closing Price, Mar 22, 1894.	Par.	Latest Dividend.	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.
			£ s.		£ s. d.			
Pigg's Peak .....G	-/6	-/6	1 0	—	1 0 0	230,326	Swazieland ...	6, Queen-street-place
Potchefstoom ... G	3/- 4/-	4/-	1 0	—	1 0 0	161,000	Potchefstroom	19, Bury-st., E.C.
Princess Estate G	1⅝ 1¾	1⅝	1 0	—	1 0 0	72,046	Witwatersrdt.	33, Cornhill, E.C.
Randfontein .....G	12/3 12/9	12/9	1 0	—	1 0 0	1,968,500	Witwatersrdt.	59, Holborn Viaduct.‖
Read's Drift .....G	9/- 10/-	10/-	1 0	—	—	50,000	Transvaal	19, Finsbury circus.
Robinson .....G	5 15/16 5⅞	5 11/16	5 0	4% June '93	5 0 0	543,750	Transvaal	55, Holborn Viaduct.‖
Roodepoort Un. G	—	—	1 0	—	1 0 0	100,000	Witwatersrdt.	Warnford-court.‖
St. Augustine ...D	-/4½	-/4¼	1 0	—	1 0 0	465,000	Griqualand W	30-1, St. Swithin's-la
Salisbury New ...G	2⅝ 2⅝	2⅝	1 0	—	1 0 0	93,000	Witwatersrdt.	1, Crosby-square.‖
Sheba .....G	23/- 23/6	23/-	1 0	-/6 April '94	1 0 0	614,450	Lydenburg ...	85, Gracechurch-st.
Sliati .....G	4/- 4/6	4/6	1 0	—	1 0 0	625,000	Zoutpansberg.	4, Sun Court, E.C.
Simmer & Jack...G	6 6¼ xd	5 1/16	1 0	10% Nov '93	1 0 0	83,000	Witwatersrdt.	33, Cornhill.
S.A. Gold Trust ...	17/6 18/6	18/6	1 0	10% April '93	0 10 0	220,000	South Africa.	8, Old Jewry.
Spitzkop .....G	2/6 3/-	2/-	1 0	—	1 0 0	144,531	Lydenburg ...	15, Bishopsgt-st, Wt.
Stanhope .....G	1 11/16 1 13/16	1 15/16	1 0	50% May. '93	—	34,000	Witwatersrdt.	1, Crosby Square.‖
Sutherland R. ...G	3/6 4/-	4/-	1 0	—	0 18 0	220,000	Zoutpansberg.	3, Budge-row, E.C.
Teutonia.....G	—	—	1 0	—	1 0 0	96,000	Witwatersrdt.	8, Old Jewry.
Trans. Coal Trust...	11/3 11/9 xd	12/6	1 0	-/6 Oct, '93	1 0 0	439,985	Witwatersrdt.	Broad-st. House, E.C
Trans. Est. & Dev.	10/- 11/-	11/-	1 0	—	1 0 0	285,700	Transvaal	76, Old Broad-st. E.C.
Trans. Gold .....G	36/- 37/-	35/-	1 0	1/- Dec, '93	1 0 0	250,000	Transvaal	Suffolk House, E.C.
Trans. Land (15/-)	2/- 3/-	3/-	1 0	—	0 15 0	250,695	Transvaal	33, Cornhill.
Un. Ivy Reef.....G	18/9 21/3	21/3	1 0	—	1 0 0	45,000	Transvaal	110, Cannon-street
Un. Langlaagte ...	¾ ⅞	⅝	1 0	—	1 0 0	100,000	Witwatersrdt.	23, St. Swithin's la.
Van Ryn .....G	9/16 5/8	10/-	1 0	—	1 0 0	59,800	Witwatersrdt.	1, Crosby-square.‖
Victory Hill .....G	—	—	1 0	—	1 0 0	103,000	De Kaap	Portland House, E.C.
Village Main Reef	4¼ 4⅜	4¼	1 0	—	1 0 0	132,000	Witwatersrdt.	8, Old Jewry.
Virginia.....G	—	—	1 0	—	1 0 0	48,335	Transvaal	26, Budge-row, E.C
Vogelstruis .....G	—	—	1 0	—	1 0 0	150,000	Witwatersrdt.	34, Leadenhall-bldgs.
Wemmer .....G	4¾ 4⅞	4⅞	1 0	10% Nov. '91	1 0 0	55,000	Witwatersrdt.	19, Bury-street,†
Witwatersrandt ...	—	—	1 0	—	1 0 0	250,000	Witwatersrdt.	19, Bury-st., E.C.
Wolhuter .....G	3¼ 3⅝	2 15/16	1 0	—	1 0 0	120,000	Witwatersrdt.	Warnford-court.†
Worcester .....G	1⅞ 2	2	1 0	—	1 0 0	90,727	Witwatersrdt.	8, Old Jewry.‖
Zwartland Land ...	—	—	1 0	—	0 18 0	150,000	Transvaal	19, Birchin-lane,E.C.

NEW ISSUE.

THE TOWERS HILL GOLD MINE (LIMITED), CHARTERS TOWERS, NORTH QUEENSLAND.

THE capital of this company is £80,000, in 160,000 shares of 10s. each; 53,333 shares, fully paid, to be issued in part payment of the property. The company has been formed to acquire and develope an extensive gold mining property, known locally as the Towers Hill Tunnelling Company, and such other properties as may be acquired at Charters Towers. The area of the property, known as the Towers tunnelling area, is 63 acres 3 roods, held under miners' rights or license for the Crown, No. 1858, held under the usual conditions. The property is practically in the midst of a well-grown group of mines of this celebrated gold field. It is situated south of and adjoining the North Australian, the North Australian Block, Rainbow, and Mosman's Company, on the east it is joined by the Mary P.C. and Rainbow Lease, on the west by the Hidden Treasure Mine, and is north of and adjoining the Moonstone Mine. The property covers an area on the underlay of the six lodes of about half a mile in length by a quarter of a mile in width, thus forming one of the largest mining properties in this famous gold field.

It will be seen from the prospectus that the certified returns from the office of the Warden of the gold field show that the average yield of gold from large quantities of quartz raised and crushed from the lines of reefs traversing this area are exceptionally good. From 1875 to 1891—tons crushed, 26,995; yield of gold, 54,761 ounces 18 dwts. 13 grains. The total yield of gold from the Charters Towers field is set forth in the *British Australian* newspaper, March 9, 1893, as follows:—Ounces, 2,558,376; or a total value of about £9,000,000. The rapidly increasing output of gold and dividends from Charters Towers, with the improvement of reefs at great depths, and facilities for mining, milling, and treatment of ores, fully warrants the high estimates formed by practical authorities of the immense value of this gold field for the profitable investment of capital. Amongst the best paying mines on this gold field are the following, with dividends paid for 1892:—Day Dawn P.C., £12,500; Victoria, £41,400; Brilliant, £37,500; Mills United, £22,500; Victory, £97,500; Day Dawn Block and Wyndham, £49,840; and for 1893, Mills United paid no less a sum than £97,500; Victory, £80,000; Victoria, £32,400; Brilliant, £18,750; Kelly's Queen Block, £15,800; and New Queen, £11,968. The immense success of so many of the mines on Charters Towers is sufficiently encouraging to warrant the development of properties in good positions on recognised and well proved lodes. With the magnificent prospects daily increasing in most of the Charters Towers Mines, it may be fairly assumed from the position of the Towers Hill Mine, and the value of the reefs underlying the property, that it will soon take a prominent place amongst the best mines of the field.

OTIS STEEL COMPANY (LIMITED).—The sixth ordinary general meeting of the Otis Steel Company (Limited) took place to-day at Winchester-house, Old Broad-street.—Mr. J. T. Smith, who presided, referred to the serious condition of the iron and steel trades in the States during the past year. Although fairly busy in the early months of the year, their total production for 1893 had been only 65,000 tons of steel, a large proportion of which had been of a class that, even in ordinary times, yielded a moderate profit. A new system of management at the works had been inaugurated by Mr Holland, one of the London directors, and already the returns were showing greatly improved results in the manufacturing department, and when the cloud of adverse trade was removed the company would be in a better condition to take advantage of it than had yet been the case. Some of them might have seen that in the report issued by the committee appointed to look into the affairs of the Trustees and Executors Corporation, certain observations had been made as to the dealings that corporation had in this company's shares at the time the prospectus was issued. This information came as a matter of news to the board.—Major Isaacs advocated the writing down of the capital, and, after the report was adopted, a committee of five shareholders was appointed to confer with the directors on this and other matters.

THE COST OF SILVER PRODUCTION.—In an article in the *New York Times* of the 11th inst., giving the history of American silver mining, with the growth of the production and the temporary checks from declining prices, the author concludes that as transportation facilities and the mining methods are cheapened there will be a constant decline in the cost of silver production; that if the output is checked at 60 c. per ounce because few mines pay, this is probably only temporary; and that the steady reduction in the cost of mining indicates that there is no minimum price below which silver cannot be profitably produced which can be called fixed or absolute. This minimum, in fact, constantly changes, every reduction in the cost of transport and every cent taken off the cost of food and supplies at the mines contributing towards reducing the cost of putting silver on the market. Electricity, as yet only partly developed, may further cheapen the cost of mining, enabling America to produce silver profitably, not at 60 c. per ounce, but at 50 c. or 45 c. The writer, according to the *Times* Philadelphia correspondent, says: "The repeated congresses gathered to help silver will always fail, because they try to get a certain result from uncertain facts. The only way to control the price of silver is," he adds, "to curtail the production. There is no other way."

LATEST FROM THE MINES.

CABLEGRAMS AND TELEGRAMS.

AUSTRALASIAN MINING.—The directors have received a cablegram from the mine, dated 29th March, giving result for last four weeks' crushing as follows:—"24 days 223 tons, 142 ounces, £490 value, £50 profit."

BAYLEY'S REWARD.—The following cable dated 29th instant has been received from Melbourne by London office:—"Have declared a dividend of 4d. 6th April, and placed substantial sum reserve fund. Estimate over 3000 tons rich ore at grass. Waiting battery, which hope start next month." The following is a message from manager dated 26th March:—"Reef 220 level 8 feet wide, showing gold wall to wall; top stopes and 100 level looking as well as ever; water main shaft 1000 gallons per day, and increasing. We have in our hands 600 ounces gold and 3 tons picked ore, average 400 ounces gold per ton."

BROKEN HILL PROPRIETARY.—For the week ending the 29th March, 10,145 tons of ore were treated, yielding 965 tons of lead containing 267,828 ounces silver. The price of the shares in Melbourne is £2 5s.

BUFFELSDOORN ESTATE AND GOLD.—The following is the translation of a cablegram received from the head office of the company in Johannesburg: "Have consolidated the company's liabilities by the issue of £30,000 debentures making dividend paying company possible. About to commence crushing with 70 stamp mill next week.

COLOMBIAN HYDRAULIC.—The directors have received the following cablegram of the result of Run No. 192:—'We have cleaned up after a run of 44 days, during which time we have washed 820 hours. The gross returns are £3000, the net profit is £1750."

EXPLORATION COMPANY.—Alaska Treadwell Gold Mining Company: Cablegram from Alaska announces the March clean-up as follows,—"Shipment of bullion $37,322, tons of ore milled 13,201, tons of sulphurets treated 190, of bullion there came from sulphurets $5464, estimated gross expenses for period have been $21,388. The net profits available for dividends for the first 10 months of the present financial year are, therefore, about $388,000. Mining operations delayed by severe weather."

GELDENHUIS ESTATE AND GOLD. — Elandsfontein No. 1 (Limited): According to cable advices received this morning from the head office at Johannesburg, South African Republic, an interim dividend of 20 per cent. has been declared payable to all shareholders registered on the 11th of April, 1894. The transfer registers will be closed from the 12th to 16th April, both days inclusive, and the dividend warrants will be issued immediately after the arrival at Johannesburg of the return of transfers lodged for registration at the London office of the company, 29 and 30, Holborn Viaduct, E.C., up to 4 p.m. on Wednesday the 11th day of April. Further, 12,500 shares (of the nominal value of £1) are to be offered at £4 5s. per share to shareholders, *pro rata* to their registered holding on the evening of Wednesday the 11th proximo, this issue being guaranteed by the board of directors. The list of applications to be closed on 16th April, 1894. Cyanide works are expected to commence operations about June, thereby largely increasing the profits.

GUADALCAZAR QUICKSILVER.—The quantity of quicksilver drawn off during the week ending March 22, as cabled from the mines, amounts to 2900 lbs., equal to 38⅓ flasks.

KABOONGA.—The following cablegram has been received from the manager at the mine:—"South west drive 1020, south east drive 1016. Have commenced borings in the face of south west drive."

ORION.—The following information has been received by letter dated March 5:—"Workings for February: Tons milled, 3420; stamps working, 40; No. of days mill ran, 22 days 3 hours; yield from plates, 902·23 ounces; tailings treated by cyanide, 1600 tons; yield of bullion from cyanide works, 1553·22 ounces."

ROODEPOORT DEEP LEVEL.—The crosscut from No. 1 level has been driven 70 feet, and has cut the south reef which is 20 inches wide and assays 8 ounces 15 dwts.

TRANSVAAL GOLD EXPLORATION AND LAND.—The directors have received intimation by cable that a Government telegraph station has now been established on the company's property at Pilgrim's Rest.

WASSAU (Gold Coast).—The produce of the mine for the month of January last realised £1365 4s. 7d., being 350 ounces standard—the mill worked 21 days 21 hours, and crushed 300 tons of ore, giving a yield of 1 ounce 3 dwts. standard per ton. Cablegrams have since been received advising the remittances for last month as 297 ounces and a yield of 1 ounce 2 dwts. per ton.

A TELEGRAM from Warsaw announces a terrible disaster at a coal mine near Koszeleff. One of the shafts collapsed, burying the miners who were at work below. Up to the present 11 dead bodies have been recovered, and a number of men have been rescued in a seriously injured condition.

FORTHCOMING MEETINGS.

*** We shall be obliged if Secretaries or other Officials of Mining, Railway and other Companies' will be good enough to advise us as early as possible of the date, time and place of their forthcoming meetings—whether statutory, semi-annual, annual, general or extraordinary, confirmatory or adjourned—in order that particulars may be announced for the benefit of our subscribers and more particularly our country readers. Balance sheets, reports and other matter to be submitted at such meetings should, where possible, accompany the intimations of the meetings sent.*

Name of Company.	Date.	Nature of Meeting.	Place.	Time.
Canadian Agricultural Coal Company	April 2	General	Winchester Ho	2 p.m.
Idaho Exploring Company...	April 2	General	Winchester Ho	2.30 p.m.
Colombian Gold Dredging Co	April 2	General	Cannon-street	2 p.m.
Durban Roodepoort Gold Mining Company	April 5	General	Winchester Ho	2.30 p.m.

REPORTS FROM THE MINES.

*** We find it necessary to announce that, owing to the vast numbers of mining reports, and items of mining intelligence which reach us invariably very late—up to, and frequently after the time of going to press—it is impossible to guarantee the insertion of all of them in the issue in which, in ordinary course they should appear. We always endeavour, however, to make this important feature as complete as possible, and if the secretaries of mining companies, mining captains, and others would kindly make an effort to let their reports, etc., reach us early on Fridays, when it is not possible to let us have them earlier in the week, their doing so would go far to ensure their insertion, and to promote the completeness of our Mining Intelligence.*

BRITISH MINES.

DEVON GREAT CONSOLS.—William Clemo, March 29: Watson's engine shaft: In the 172 fathom level east the lode is 4 feet wide, yielding 3 tons of copper and mundic ores per fathom, a promising lode. The lode in the 160 east is 3½ feet wide, producing saving work of copper and mundic ores. In the 148 fathom level east the lode is 3½ feet wide, yielding 2 tons of copper and mundic ores per fathom. The stopes throughout the mines are yielding large quantities of copper and mundic ores.

DRAKEWALLS.—J. Hosking and T. Chapman, March 29: During the week the shaftmen have been attending on the forking of the water, and repairing the timberwork of the shaft Having had to stop pumping nine hours to replace broken pins in the pump-rods, the forking has, of course, been prolonged, but it appears we shall be drained to the bottom of the shaft to-morrow evening, when sinking will be resumed, The crosscut at the 160 east of engine shaft is passing through hard capel, carrying a little tin. The two stopes in the back of the 160 east of the engine shaft are producing mundic of fair quality, but in consequence of the water being in the bottom level we have been unable to draw any tinstuff from our best stopes during the week.

GREEN HURTH.—March 22: There is no material change to note in any of our workings this week. Annie's vein south forehead worth 3 tons per fathom. Stope in back of the above worth 1½ ton per fathom. Drivage from the sump worth 3 tons per fathom.—South west branch above 30 level: The south forehead worth 2 tons per fathom. North end poor.—Watson Gray.

LEADHILLS.—W. H. Paull, March 26: Brown's Vein: At the 160 fathom level south of Jeffrey's shaft there is no material change in the vein. In the 160 fathom level driving north of Wilson's shaft the vein has improved, and some good stones of lead ore have broken from the forebreast. In the winze sinking below the 145 north of Wilson's shaft the vein is 5 feet wide, now yielding 25 cwts. of ore per fathom. The vein in stope above the 145 north of Jeffrey's shaft is worth 30 cwts. of ore per fathom The stope above the 130 north of Jeffrey's shaft will yield 20 cwts. of ore per fathom. The vein in the 115 fathom level north of Jeffrey's shaft has a kindly appearance, producing a little ore worth 5 cwts. per fathom. In No. 1 stope over the 115 north of Jeffrey's shaft the vein yields 35 cwts. of ore per fathom. The vein in No. 3 stope, over same level north, is worth 35 cwts. of ore per fathom. In the 115 fathom level south of Wilson's shaft the vein is without any improvement as yet, but contains a little more spar. The vein in the 100 fathom level north of Jeffrey's shaft is 4 feet wide, which contains a good deal of spar but without ore. In the stope below the 100 north of Jeffrey's shaft the vein will produce 15 cwts. of ore per fathom. In the forebreast of the 100 fathom level going south of Wilson's shaft the vein is 4 feet wide, carrying a mixture of spar, but rather dry. At the 85 fathom level driving south of Wilson's shaft the eastern part of vein is improving as extended upon, and will now produce 35 cwts. of ore per fathom. The vein in No. 1 stope over the 85 south of Wilson's shaft is now worth 100 cwts. of ore per fathom. In No. 2 stope over same level the vein yields 20 cwts. of ore per fathom. The vein in No. 2 winze, sinking below the 70 south of Wilson's shaft, is 5½ feet wide, composed chiefly of kindly spar, but no ore. In the stope above the 50 south of winze the vein is worth 45 cwts. of ore per fathom. The vein in the stope below the 35, south of flat rod shaft, is yielding 90 cwts. of ore per fathom. The stope over same level, south of ditto, is producing 25 cwts. of ore per fathom.—Sarrowcole vein: In driving Gripp's adit south of George's Roast vein there is no material change, a little water still issuing from the forebreast.

NEW MINERA.—Mining report for the two weeks ending March 23rd:—255 Yard Level: Four men on tribute, estimated to

produce 10 tons lead ore and blende per month.—275 Yard Level: East of No. 2 rise on north lode stopped.—295 Yard Level: Stope on north lode west of crosscut stopped. East of winze on north and south lodes three men on tribute estimated to produce 7 tons lead ore and blende. East of sump two men on tribute. Lode worth 2½ tons per fathom, estimated to produce 4½ tons lead ore and blende. West of sump two men on tribute. Lode worth 2½ tons blende per fathom, estimated to produce 4½ tons per month. West of pass two men on tribute. Lode worth 2½ tons blende per fathom, estimated to produce 4½ tons per month. 315 yard level driving east of main crosscut still promising well; some nice stones of lead ore and blende found. West of incline shaft two men on tribute. Lode worth 2½ tons per fathom, estimated to produce 4½ tons blende per month. West of winze two men on tribute. Lode worth 2 tons blende per fathom, estimated to produce 4 tons per month. Stope near forebreast west two men on tribute. Lode worth 3 tons blende per fathom, estimated to produce 5 tons per month. 335 yard level driving east of incline shaft stopped. West of incline shaft two men on tribute. Lode worth 2 tons blende per fathom, estimated to produce 4½ tons per month. East of incline shaft two men on tribute. Lode worth 2 tons blende per fathom, estimated to produce 4 tons per month West of winze two men on tribute. Lode worth 2 tons lead ore and blende per fathom, estimated to produce 4 tons per month. Near forebreast two men on tribute. Lode worth 2 tons blende per fathom, estimated to produce 4½ tons per month. —Dressing: 37 tons blende sent off since last report, making the total quantity sold 3908 tons blende and 1689 tons lead ore.

PHŒNIX UNITED.—Setting report.—West's shaft: The 80 to drive west on the north lode by four men at £2 10s., worth per fathom £8. The 50 to drive west at £3, where the lode is worth £7. The 30 is being driven west in granite at £3 per fathom. The adit is being driven west by two men and two boys at £3 15s., where the lode is worth £9.—Western Mine: The 100 is being driven east at £4 15s., where the lode is worth £7. This level is also being driven west by four men at £8 per fathom, where the lode is worth £12. We are putting up a rise in the back of this level, where the lode is worth £10. The 70 fathom level is being driven west at £9 where the lode is worth £8. The rise going up in the back of the 40 is worth £9. The rise in the back of the 20 by four men at £4 5s. is worth £10 per fathom. No. 2 rise in the back of this level is worth £12 per fathom. To rise in the back of the adit by four men at £2 10s., lode worth £9. The midway level to drive west by four men at £4 10s., lode worth £8. In this part of the mine there are 12 stopes working by 44 men, the lode being worth from £7 to £14 per fathom, and at various points we have 30 tribute pitches working by 90 men at tributes varying from 6s. 6d. to 13s. in the £ for tin.—(Signed) Jno. Williams, Jno. Rundle, Wm. Manly, Jas. Hosking.

POLBERRO.—March 24: For the last 3 fathoms we have been driving through a series of gossans in the 26 west on the Pink lode, and we are not yet clear from these interruptions. The gossan in the present end is about 1 foot wide. The lode in the 26 east yields large quantities of mundic and a little tin, and fully maintains its size and favourable character. We have driven over 5 fathoms in the 20 west during the past month. The lode in the end is 3 feet wide, and produces good stones of tin. We are making very good progress in driving this end, and will soon get over the run of tin ground driven through in the 26. There is no change of importance in the 26 cross cut north.—(Signed) Charles Thomas, John Harper.

WHEAL AGAR.—March 24:—Setting report: Robarte's engine shaft to sink below the 320 fathom level on new north lode by 12 men and three labourers with boring machine. Contract to sink two fathoms for £100; shaft to be carried 12 feet long by 8 feet wide. The lode is more than the full width of the shaft, and worth for its length and part carried £35 per fathom. Operations at the 320 fathom level east and west of shaft on the same lode are for the present suspended, it being desirable to communicate the 320 with the 315 fathom levels to give improved ventilation and means of exit. These points also are set on contract to 12 men with two boring machines to complete the work in 10 days from date for £45. The lode in the rise is worth £10 per fathom. That in the winze is of the same character and value Immediately on the completion of this job we shall resume the drivage at the 320 fathom level west, where the lode is composed of soft friable quartz, chlorite, and mundic, and worth for tin £8; price per fathom for driving will be £7 10s. with six men and boring machine.—The 320 east of shaft: The same remarks will apply to this point also; here the lode is of a masterly size, composed of peach, capel, and quartz, and worth for tin £9 per fathom. This will be driven for £8 per fathom. At the 285 fathom level we are operating on a speculative point with the view of intersecting the run of tin ground now seen and worked on in the bottom of the 270 fathom level on the north part of Waddington's or main lode. Stopes: A stope in the back of the 270 fathom level by six men and boring machine at 4s. per ton; the lode worth £9 per fathom. No. 1 stope in the bottom of the 255 by 12 men at 4s. 9d. per ton; lode worth £12 per fathom. No. 2 stope in the bottom of the 255 fathom level by nine men at 4s. 9d. per ton; lode worth £12 per fathom. A stope in the bottom of the 245 fathom level east of No. 3 crosscourse at 4s. 6d. per ton; lode worth £11 per fathom. We have 13 tribute pitches working by 45 men, at an average tribute of 8s. 10d. in the £. The whole of the machinery on the mine is in fairly good condition and working well.—William Hambly, Ralph Daniel, M. D. Penhale.

COLONIAL, INDIAN, AND FOREIGN MINES.

BRILLIANT BLOCK.—Mine manager's report for fortnight ending February 7: No. 5 level west driven 22 feet from shaft, showing a reef 5 feet thick of medium quality. No. 5 level east driven 23 feet from shaft, carrying a reef 5 feet thick of fair quality. No. 4 level west extended 18 feet by contract, total length from shaft 365 feet, carrying a reef 3 feet thick of low quality. We are stoping in four stopes over this level on from 1 to 3 feet of stone of low quality. The footwall drive on the No. 4 level east has been extended 16 feet by contract, total length from shaft 261 feet, carrying a reef 2 feet thick of good quality. One stope is being carried on over this drive on about 3 feet of stone of good quality. The hanging wall drive on this level is extended a further 20 feet, carrying a reef 2 feet thick, of good quality. Total length from starting point 84 feet. Stoping is being carried on over hanging wall drive in two stopes, on a reef varying from 6 inches to 3 feet thick, of good quality. We are stoping in one small stope over No. 3 level east, on 2 feet of good stone. In No. 1 level east we are starting to take out a block of ground at bottom of winze, through which the Brilliant Company holed into our mine. Stone raised during the fortnight, about 600 tons, and a very heavy haulage of water. Stone crushed at Bonnie Dundee mill, 590 tons, for a yield of 554 ounces 13 dwts. of gold,

BRITISH BROKEN HILL PROPRIETARY.—The mining Manager's report for the week ended Wednesday, February 14, states:—Blackwood (No. 1) Shaft, 200 feet Level: The winze going down in the sulphide ore body in the No. 1 west crosscut has been sunk only 2 feet during the week, making its total depth 41 feet. The bottom keeps very hard, and is badly mixed with quartz.—Howell (No. 2) Shaft, 200 feet Level: No. 3 west crosscut, far north stopes, we have been cleaning up an old winze on the sill floor, which is down 39 feet in depth, and are now starting an east crosscut off same at this point.—Tributers: During the week the tributers have broken a large quantity of ore, all of which has been shipped to the Dry Creek Smelting Company, the total shipped being 219 tons 19 cwts., averaging 46 per cent. lead and 8 ounces silver per ton.

BALKIS EERSTERLING.—In a letter dated Eersterling, February 23rd, our manager reports as follows:—The reef at the 160 feet level has improved in value, and in the present west end the reef is worth from 10 to 12 dwts., and is over 3 feet wide. Some of the stone taken out panned very rich, and the sampled showed certainly over an ounce of gold per ton of stone and the reef is looking well and strong. In the east end, however, the reef is in the hard porphoritic schist to which I have referred so frequently of late, and is pinched out. The shaft, as you know, is also in these hard slates, and if we can find that the reef holds down through them, say for even 30 feet, we way feel pretty well assured that we have a true and permanent fissure vein with—judging from present prospects at the 160 feet level—every chance of good value for gold. Throughout the length of the drive west the reef has been auriferous of value from about 4 dwts. upwards. We have now driven in this direction 97 feet from the shaft. If one can find that the reef holds down in this hard ground, we can be sure of having a permanent vein. We shall very soon prove it now.

DON PEDRO.—Mine report No. 4: March 6: Stope No. 1 has been stoped 9 feet. The lode here (No. 8 shoot) has improved, the improvement being more marked near the footwall of the lode. Stope No. 2 continues of the same quality and nature as when last reported on. As in No. 1 the lode is richer near the footwall. Advanced for the month 7 feet. Stope No. 4 is still yielding high class mineral, showing no change for the month. It has been stoped 10 feet. Stopes Nos. 2 and 4 are now 6 feet ahead of stope No. 5, which was the furthest east. This proves the No. 8 shoot for 6 feet further along the direction of its dip. The 60 fathom cross cut has been driven 15 feet, most of which has been done in the last fortnight, the first half of the month having been taken up in getting through the disturbed ground. The amount of water has not materially increased. The forebreast is still in soft sandstone. I have not yet been able to on the shoot of lode passed through by the 60 fathom level cross cut, as I have had an extra number of men securing some of the old workings. Pillars have been built in the western part of stopes 1, 2, and 3 at the 50 fathom horizon, and in stope No. 7. This work being completed, the men will be immediately put to work on the shoot of lode at the 60.—Pumping machinery and transmission: The top rope of the wire transmission was on the 18th ult. cut and shortened. At the same time the pumping machinery both in the mine and at surface was examined and found in good running order.

ELKHORN.—Copy of Mr. C. A. Molson's monthly report for February: Mine: Ore Breaking Department: 650 feet level south back stope the vein is 2 feet 6 inches wide, and assays 28 ounces. The ore is making into the footwall again. The No. 2 stope vein here carries less lead than usual, the value being 44 ounces and 3 per cent. lead for an average of 3 feet. The old workings above the stope are yielding dry porphyry ore, assaying 30 to 35 ounces which helps to form a desirable mixture for the mill. The 750 feet level north crosscut raise stope vein is 4 feet wide and the value 45 ounces. A small amount of lead ore is being sorted out from the dry quartz. The inside stope vein is 12 feet wide and the value 40 ounces. Some high grade lead ore occurs on the footwall in the centre of the stope. The 850 feet level north vein is 6 feet wide and the average value 37 ounces. A band of carbonate ore, assaying 50 ounces and 30 per cent. lead, lays on the dry quartz. Its width is 10 inches to 15 inches. The 950 feet level north vein is 5 feet wide and the value 40 ounces. The stope is all in dry ore. The 1050 feet level south back stope vein is 6 feet wide, and the average value 54 ounces. On the hanging wall side there is 2 feet of lead ore assaying 75 ounces and 8 per cent. lead. The vein north of the shaft is 4 feet wide and the value 35 to 40 ounces. Connection has been made from the top of the old stope to the 950 feet level. The ore is regular and all of the milling class. The raise stope vein is 2 feet wide and the value 30 ounces. Work in the 1150 feet level has been stopped temporarily pending the timbering of the stope below which shows signs of weakness in the roof. The 1250 feet level north raise stope vein is 30 inches wide and assays 30 ounces, with some bunches of lead ore The 1350 feet level south footwall lead chamber vein is 2 feet wide and the value 175 ounces and 15 per cent. lead. Some high-grade dry ore is found below the smelting ore. A crosscut is being run from the level to prove the downward extension of this body of high grade ore.—South End Raise: Connection has been made with the 1250 feet level. The vein as opened is 6 feet wide with ore still in the foot. The value is 55 ounces and 6 per cent. lead. The 1450 feet level south vein is 4 feet 6 inches wide and the value 125 ounces and 10 per cent. lead. The ore is showing partial oxidation as it approaches the 1350 feet level. Some bunches of high grade lead ore are found at the north end of the stope. The south end stope vein is 2 feet wide and the value 42 ounces. The north of the shaft vein is 2 feet wide and assays 55 ounces. The ore occurs in rich stringers in the sand rock. The 1550 feet level south raise stope vein is 5 feet wide and the value 50 ounces. The footwall portion is mainly smelting ore, assaying 100 ounces and 10 per cent. lead. The north of the shaft raise stope vein is 2 feet wide and assays 30 ounces.—Prospecting Department: 1650 feet level south previously reported 13·5 feet, advanced in February 203 feet, total length March 1 216·5 feet. Several bands of hard slate have been passed through, but the face of the drift is now in the regular iron-stained sandrock similar to that usually met with in the drifts south of the shaft. No work has been done in the north drift and all other prospecting work has been suspended for the time being Amount and source of ore hoisted: 650 level 43 cars, 750 level 147 cars, 850 level 191 cars, 950 level 302 cars, 1050 level 304 cars, 1150 level 145 cars, 1250 level 116 cars, 1350 level 201 cars, 1450 level 548 cars, 1550 level 29 cars; 2026. Number of tons, 1152.—Milling Department: The mill made its usual steady run during the month, the delays being due to the incidental and regular repairs of worn-out castings.—Table of Work performed in February: Ore on hand February 1st 60 tons, raised from the mine 1152 tons, less smelting ore 182 tons, waste sorted out 171 tons, 353 tons, 798 tons, add for salt 149 tons, dry ore panned 926 tons. Pulp in the mill, 17·97 tons. Rough ore in stock, 64 tons. Total, 1008·81 tons. Total, 1008·81 tons.—Table of mill work: Dry tons panned, 926·845 tons. Average assay value, 38 64 ounces. Average percentage salt used, 14 per cent. Average value of tailings, 2·55 ounces. Average percentage saved, 94 21 per cent. Number of Doré bars produced, 42 bars. Number of ounces fine silver, 36,268 83 ounces. Number of ounces pure gold, 24·835 ounces. Batteries in service, 26 days. Pans in service, 27 days. Estimated value of bullion shipped, $21,430. Actual returns for ore shipped, $11,034·24. Total, $32,464·24. Current expenses, including salaries, labour and supplies, $21,695·54. Balance, being profit for February, 1894 (or at 4·85 to £ sterling = £2220), $10 768·70. — Surface Department: Fuel: The usual supply of fuel is coming in over the tramway.—Dust Chamber: We are putting in an additional dust chamber in the mill to further reduce the loss from this source. The weather has been a little warmer, and the snow has settled down. Everything about the works is in good order.

GLENROCK.—The following mail advices have been received from New Zealand, of February 17, from Mr. W. J. Stanford: Premier mine: The work that is going on at present is entirely confined to breaking quartz to supply the mills, on which work some 30 men are at present employed. A good supply is being obtained from reef No. 2 whence some very rich assays have been obtained this week, Stopes 1 and 2 showing ore, assaying from 11 dwts. to 8 ounces of gold to the ton.—Main reef: We have traced it now eastwards as far as the old Pass No. 7; here it is now steadying and assuming a more definite shape. Up to this point it has been split in two with a large horse of mullock between The opening up and timbering of the chamber westwards on the 6th level of the mine has occupied some little time; it is now, however, secure, and we are driving to cut the reef at this level.—Cyanide works: After much delay, at last a start has been made. Cassel Company's representative is at present here. From the first charge of about 4 tons we have recovered some 21 ounces of gold. The erection of this plant, the first in Otago, will be a very great advantage to our monthly output. The consulting engineer, Mr. L. O. Bal, reports as follows: I anticipate a steady and increasing output from the mine, as it is opened up and developed, and think that underfoot and ahead there is better quality of stone than heretofore crushed by the company, as at depth the reefs underlie and join in together, and ahead junction in laterally. The junction lateral of all the lodes, four in number, is at present ahead of our workings, and when we attain this point I look for larger and better shoots of stone than any we have as yet had, and I consider it important to keep the new low level adit constantly going ahead.

HARQUAHALA.—Copy of Mr. T. Allen's report for the month of February, 1894: Mining Department: Prospecting: The intermediate cross cut between third and fourth levels north has been advanced 27 feet during the month, through quartzite all the way. Pan samples show free gold, but values are low. The total length of the footwall crosscut No. 2, 5th level is 27½ feet. No developments of importance have occurred. Pannings give small quantities of free gold.—Hanging wall crosscut, Discovery Vein, 5th level: We have driven this crosscut 27 feet during the month, bringing its total length to 125 feet. Several seams of quartz have been encountered, the widths and values being unimportant, At present the face of the crosscut is in very hard unmineralised rock. The total length of the main crosscut, 6th level, is now 250 feet, the distance advanced for the month being 21 feet. Connection has now been made with the bottom of the deep winze on the iron vein. We cut the iron vein at this pont, Its width here is 3 feet, and its value about $18 per ton.—Iron vein 6th level south: We have commenced drifting south on this vein, the distance advanced being 20 feet. The vein in the face has narrowed, due to a fold in the limestone footwall. The vein is 2 feet wide, and its average value $11 per ton in gold. In Discovery vein sixth level south a drift has been started southerly on the vein. The face is all in ore, and its milling value $18 per ton. In order to prospect the northern portion of the Discovery vein, fourth level north, one of the old drifts was extended on the north side of the old shaft, in the footwall section of the Discovery vein on the fourth level. The distance advanced is 62 feet, but nothing of importance has been developed, The present face of the drift is in hard unmineralised porphyry; we have, therefore, suspended operations in this direction. During the month the new shaft has been sunk 37 feet. Its total depth is 272 feet. In addition to this work the station has been cut and timbered at the sixth level, and a trip plat excavated. This completes the work in connection with the new shaft to the present deepest level of the mine; the old shaft is entirely abandoned, and all hoisting is now done through the new shaft.—Golden Eagle Group: Main tunnel has been advanced 35 feet through quartzite. Small seams or stringers of quartz have been encountered, their widths only being a few inches. The assay values vary from $2 to to $10 per ton in free gold.—Raise No. 1: A raise on the vein to connect with the north shaft has been put up. The raise is 17 feet in height, and the connection made with the north shaft. The vein is narrow in this section, its width being 1 foot, with an assay value of $8 per ton.—Miscellaneous Work: The air compressor, which arrived at the end of last month, is now in place and working satisfactorily. The dynamo which was run in connection with the mill engine has been removed and placed alongside the compressor. It will be driven by a small upright engine, which had been discarded by the former owners as useless, We found that this small engine only needed a new crosshead and gibbs; it has therefore been repaired, and will now be used solely for the dynamo and lathe. Under the old conditions, when the mill engine stopped the dynamo had to be shut down, and we found it a great inconvenience. The diamond drill is in operation, and is doing well so far. There has been some delay in obtaining carbons for the bits, on account of the old firm who supplied the Elkhorn Company having gone out of business; but I have addressed two other firms, and expect shortly to receive a supply which will prevent actual cessation of the drill. The elevation of the mill ore bins has been completed. This work was necessitated by the increased height of the new shaft level over the old shaft. It has, moreover, an advantage as the new additions to the bins are so constructed as to hold fully double (if not more) the capacity of the old ore bins, and if anything should prevent our hoisting ore from the mine the bins will contain sufficient ore to keep the mill running for a few days, till the renewal of hoisting operations through the shaft. The battery blocks for the additional stamps are in place. All the timbers are on the ground and being framed ready for erection. The new mess house for the officers is completed and moved into, and is a source of general satisfaction to all. A new corral for the company's stock has been erected at a small cost. The old corral was situated off the company's property, and, anticipating trouble with the owner, I considered it wise to build one for our stock alone. Our supply of fuel is satisfactory—the stock in the yards is about 1000 cords—and this is ample in a country where hauling is carried on during almost every month of the year. The work in every department is well forward; preparations are all complete for the commencement of milling operations on 1st March. The weather has been stormy and cold; several snowstorms have occured.

KAPANGA.—W. H. Argall, February 12: I beg to hand you the mine report for the four weeks ending the 10th inst.:—Larnach's engine shaft has been sunk during the month 13 feet by nine men. In sinking we have gone through two small veins of quartz, one carrying a little pug, bearing north and south, underlying to the west at an angle of 45 degrees. The country rock is highly mineralised and apparently is becoming more settled, and as depth is attained very probably it will be more compact. Dunking rise above 300 feet level on Scotty's hanging wall portion has been put up 18 feet by two men, total distance, 60 feet. A little gold was seen in the reef during the last breaking down of same. From present indications the hanging and footwall branches will junction shortly, when we expect good results, as both branches are well defined and about 1 foot wide. We have driven south on the hanging wall branch of Scotty's reef at the 300 feet level 23 feet by two men. The branch is at present disordered through the influence of a small slide; at intervals strong colours of gold were seen. Another branch was driven on 15 feet, but nothing of importance was met with. The pitwork and machinery are working well.—Coromandel Section: Tributers are working here with very fair results. In No. 4 block two men have been stoping out their leader, and besides getting 1 ton of general quartz obtained 34 lbs. of picked ore, which gave after crushing 78 ounces 19 dwts. of retorted gold. In No. 6 block three men are working, and have crushed 24 lbs. of picked ore, which gave 44 ounces 5 dwts. of retorted gold.

LOMA GOLD MINES.—The mine superintendent confirms the cablegram giving the result of last clean-up (£210), and adds that he believes as much gold has remained in ground cut as was got out; this should be obtained in making next run. Mr. Carleton reports as follows: As I indicated to you in my last letter, the work of completing the construction of the upper and lower Cruz Gorda sections is now done. I only await the arrival of the pipe to connect these two sections. I turned the water into the ditch, and as a test of strength, placed obstructions at different points in order to completely fill the channel. No weakness was developed. The company's agent reports the due arrival at Maraquita of the pipe above referred to

MOUNT ZEEHAN (Tas.).—Manager writes for week ended February 13: Argent Section: Main engine shaft, No. 6 lode, 72 feet level north stope in back of the level continued, ore raised 60 tons, fairly good seconds. 132 feet level north same lode have raised 42 tons 5 cwts. low quality seconds. Lode is 10 feet 6 inches wide, but carries a horse of mullock 5 feet 6 inches wide. The drive north on this lode has been extended 9 feet 6 inches, total 186 feet. Lode is 4 feet wide with well defined walls, and carries some nice patches of galena. Ore raised 29 tons 18 cwts. low grade seconds. No. 4 lode 72 feet level north west cross has been extended 8 feet, total 22 feet. Frances Lode 132 feet south has been extended 1 foot 6 inches, total 20 feet. Prospect shaft on this lode has been sunk 2 feet 6 inches, total 16 feet 6 inches. Lode is 3 feet wide, 15 inches on the hanging wall being very good, showing galena in strips from 2 inches wide. Samples assayed from 77 per cent. to 81·75 per cent. of lead, and 106 to 136 ounces of silver per ton. Concentrator has been run 48 hours, and milled 136 tons 7 cwts. seconds for 17 tons 2 cwts. concentrates, containing about 12 tons 15 cwts. lead and 1195 ounces of silver. We also ran 10 hours, and treated 26 tons 13 cwts. seconds for tributers.

SPITZKOP FARM.—Manager's report for week ending Feb. 17: Hydraulic: Two monitors worked 5½ days each (or 62½ hours) during the week. The manager expects the hydraulicing to continue for another two months at least. The longer operations are continued the more successful he anticipates the wash up will be.

AUSTRALIAN BROKEN HILL CONSOLS.—The mining manager reports by mail for the fortnight ended the 15th February:—Block 96: Main shaft 280 level east No. 4 rise (off prospecting drive) driven 2 feet 6 inches; total, 23 feet 6 inches. Lode dipping north-east, in consequence of which we have had to take up a portion of the bottom of rise, to enable us to put in rails. At the end of this rise we struck several small lumps of native silver, but at this point a disturbance in the enclosing country cut the ore off. Taking up bottom of No. 4 rise driven 6 feet. No. 5 rise (off prospecting rise) driven 2 feet 6 inches; total 2 feet 6 inches. This rise is being put by contract from the apex of No. 4 rise in a north-westerly direction. The vein here contains galena. Incline sunk 6 feet 6 inches; total, 531 feet 6 inches. Lode dipping very fast, and is small but well defined. Contains good vein of galena, an assay of which gave silver 12 ounces 5 grains; lead, 74·75 per cent. No. 4 level east of incline driven 3 feet: total, 145 feet. After producing some very rich native silver and fahlerz the lode became poorer, and at present shows a few specks of silver, and a small vein of fahlerz. The amount of silver found during the past fortnight from this working was 104 lbs. containing 1214 ounces fine silver, being the richest yet found in the mine. No. 3 level east of incline, driven 14 feet. Stoping downwards on vein which yielded ruby silver and fahlerz, and occasionally native silver in small quantities. Stoping off 280 level west driven 9 feet 6 inches. The last lode formation broken contained small nuggets of silver associated with cobaltite. 280 level west prospecting drive driven 8 feet; total, 124 feet. As the lode continued small the men were transferred to stoping on the ore passed through. A quantity of good grade galena has been won, and the ore body, although smaller, is apparently continuing both upwards and downwards. Stopes from prospecting drive driven 10 feet.—Note: The quantity of rock mined during the fortnight was 2561 cubic feet.

BALAGHAT MYSORE.—Joseph Fryor, March 7: Ogle's Shaft I am pleased to say we have not only cut the necessary ground for plat, &c., at the 800 feet level, but have also deepened the shaft 2 feet below this level. The lode is at present unproductive. It, however, presents a kindly appearance. The 800 feet level north has been advanced 15 feet 9 inches, or 44 feet 6 inches from the level. I am glad to say the lode, as anticipated, has recently very much improved, and now yields quartz of from 9 inches to 1 foot wide, and assays 5 ounces 2 dwts. of gold per ton. The No. 1 winze in the bottom of the 730 feet level north has been sunk 5 feet 6 inches, or 64 feet 6 inches below the level. The quartz is 1 foot wide, and assays 4 ounces 6 grains of gold per ton. The stopes in the bottom of this level produce quartz of from 6 inches to 1 foot wide, and assay on an average 1 ounce 6 dwts. 11 grains per ton. The stopes in the back of this level yield quartz of about 1 foot wide, and assay on an average 1 ounce 5 dwts. 8 grains per ton. The stopes in the bottom of the 660 feet level north produce quartz of about 1 foot wide, and assay on an average 1 ounce 1 dwt. 10 grains per ton. Haine's shaft has been sunk 7 feet 6 inches, or 56 feet below the level. The quartz varies from 9 inches to 2 feet wide, but through being somewhat disordered its assay value is just now not so good, being only 4 dwts. 6 grains per ton. I, however, think when the ground becomes more settled that the quartz will again improve in value. The 800 feet level south has been driven 16 feet 9 inches, or 165 feet 9 inches from the shaft. The quartz varies from 1½ foot to 1 foot wide, and assays 1 ounce 12 grains per ton. The No. 1 winze in the bottom of this level has been sunk 6 feet 9 inches, or 25 feet 6 inches below the level. The quartz is 1 foot wide, and assays 5 dwts. 14 grains per ton. The stopes in the back of this level yield quartz of 15 inches wide, and assay on an average 9 dwts. 7 grains per ton. The No. 2 or midway winze in the bottom of the 730 feet level south has been sunk 7 feet, or 55 feet 6 inches below the level. The quartz is from 6 inches to 8 inches wide, and assays 10 dwts. 16 grains per ton. The stopes in the bottom and back of the 730 feet level south yield quartz of 1 foot to 15 inches wide, and assay on average 18 dwts. 21 grains per ton. Tennant's shaft has been sunk 13 feet, or 62 feet 9 inches below the 285 feet level. The quartz is about 3 feet wide, and assays 11 dwts. 4 grains per ton. We hope to be able to commence driving the new or 350 feet level north and south next week, and that we shall soon lay open some good ground for stoping.—Surface; All the surface work is progressing satisfactorily;

BONNIE DUNDEE.—Mine manager's report for fortnight ending February 10: Have continued driving and stoping east of winze from No. 7 south-west level. Have driven the level 8 feet, total distance 146 feet from winze. I think the reef is payable. Have driven crosscut from No. 8 plat a further 7 feet with four men, total from shaft 146 feet. The ground is very hard, but there is a little water coming in the face, which may be taken that we are getting near the formation we are driving to intersect. Have continued stoping from back of crosscut from No. 9 south-west level. The stopes are looking about the same as last reported—about a foot of reef in from 5 to 12 feet of hard formation. Have hauled 55 tons of stone during fortnight, making total of 160 tons in hopper. Have sunk No. 3 straight shaft a further depth of 12 feet for 4½ days, total depth from surface 402 feet. Since then have put in a frame set and timbered up 84 feet, total timbered up complete 386 feet. Have put in about 800 feet of 2 inch air pipes in the underlie, and shall complete this work and connect with the air receiver in another shift. All machinery in connection with the mine is in good order.

HARRIETVILLE.—Fortnightly report of Mr. T. G. Davey, superintendent, dated February 16: Mons Meg Mine: Winze on main shoot below tunnel D sunk 4 feet, total 110 feet. Lode large, but poor. Drive north of winze, 100 feet below D, advanced 8 feet. Lode similar to that in shaft, except that there are colours of gold in the dig. North drive, 50 feet above tunnel J advanced 8 feet, total 48 feet. Lode 20 inches wide and carrying visible gold.—Stopes: In the stope at back of drive south of tunnel D we are now breaking about 8 feet in width of the lode formation, this portion being of payable character. Lode in underhand stope at 290 feet below J 18 inches wide, and carrying fair quantities of gold. In the stope at 44 feet level below J the auriferous vein is 20 inches wide, and in this gold is freely visible. The remainder of the lode, however, is almost barren.—Guerdon Mine: Have commenced to drive south of rise on Guerdon lode, 75 feet above tunnel K. Lode 4 feet wide, and valued at 6 dwts. of gold per ton.—Swindle lode: Shallow tunnel towards Swindle lode advanced 10 feet, total 223 feet. Still traversing veins of barren quartz.—Surface: Drive north of tunnel under Jackass road advanced 14 feet, total 36 feet. Lode formation has merged into small and barren veins, and work has consequently been suspended.—Returns: Following are the returns for four weeks to 6th inst.—viz., Mons Meg, 508 tons quartz, yielding 81 ounces 10 dwts. 12 grains of gold. Also obtained 44 ounces gold from 50 tons of concentrates treated. Total gold 125 ounces 10 dwts. 12 grains.

MYSORE REEFS.—Fortnightly report of Captain M. Scantlebury, mine agent, dated March 7: Underlie shaft: This shaft has been sunk 13 feet, now 213 feet from surface. The lode is rather over 5 feet wide showing 2 good walls. Since my last report we have broken some really good specimens of gold quartz in this shaft, but the lode at present in the south end of the shaft is intermixed very much with black rock. I have taken a sample from almost every blast. From the smalls one sample assayed 3 ounces 2 dwts. 14 grains of gold to the ton and 1 ounce 6 dwts.; 4 other samples went from 6 dwts. 12 grains to 3 dwts. 6 grains. Most of the stuff that we are breaking is being stacked for the mill.—Vertical shaft: The crosscut east at the 200 feet level to intersect the lode has been advanced 14 feet 6 inches. The rock is very hard, and it was rather difficult to start from the shaft. We shall now make better speed. I have levelled the ground since my last report, and find that we have to drive the crosscut east a distance of 54 feet 6 inches to reach the lode, assuming, of course, that it is dipping at the same angle as it is in the Underlie shaft. The rock is very hard, and this will take us at least 3 weeks more to accomplish.—Trial shaft: On the western run of old workings has been sunk 3 feet, now 41 feet from surface. The water is so quick that I have been obliged to increase the number of men. I hope to be able to get down to a depth of 50 feet with the present appliances for keeping the water, and then drive a crosscut to intersect the lode on old workings.—Surface: The necessary ground is being taken out for the stamps mill and engine, and we hope in a week more to commence the building of loading for engine.

MYSORE.—R. Hancock, March 7: Mining operations for the fortnight ended March 5: Rowse's shaft: This shaft has been sunk 4 feet 6 inches, making a total depth of 124 feet below the 1360 feet level.—1360 feet level north, south of cross cut: This has been driven 2 feet, making a total distance driven of 98 feet 6 inches. The lode is 1 foot 6 inches wide, assaying 1 ounce. The rise in the back of this level has been put up 14 feet, making a total height of 51 feet. The lode is 2 feet 6 inches wide, assaying 5 dwts. 5 grains.—1260 feet level north: This end has been driven 24 feet 6 inches, making a total distance driven of 701 feet 6 inches. The lode has pinched out. The winze in the bottom of this level has been sunk 11 feet, making a total depth of 97 feet. The lode is 4 feet 6 inches wide, assaying 7 dwts. 19 grains. There are three stopes in this level. The average width of the lode being 5 feet, giving an average assay of 16 dwts. 13 grains.—1260 feet level south, cross cut west: This has been temporarily suspended, and the men put to strip down side in the 236 feet level north of Rowse's in search of quartz. The rise in the back of this level has been put up 8 feet, making a total height of 268 feet. The lode is 3 feet wide, assaying 3 ounces. There are two stopes in the back of this level. The average width of the lode being 3 feet 6 inches, giving an average as ay of 2 ounces 5 dwts. 17 grains.—1160 feet level north; Driving south on the quartz intersected at the foot of the rise has been suspended, and the machine has been put to stope in the back on a lode 2 feet wide, assaying 5 dwts. 5 grains. There are four stopes in this level, the average width of the lode being 2 feet 9 inches, giving an average assay of 1 ounce 1 dwt. 15 grains. The 1160 feet level south end has been driven 13 feet 6 inches, making a total distance driven of 117 feet. We have a pare of men engaged cutting a plat at this level. There are three stopes in the 1060 feet level north, the average width of the lode being 1 foot 2 inches, giving an average assay of 1 ounce 2 dwts. 12 grains. We have two pares of men engaged in stripping down side in the bottom of this level in which the lode is 1 foot wide, assaying 1 ounce 5 dwts. 12 grains. In the 990 feet level north we have a pare of men engaged stripping down side in the back, in which the lode is 1 foot wide, assaying 8 dwts. 11 grains. In the 890 feet level north there are three stopes, the average width of the lode being 1 foot 2 inches, giving an average assay of 13 dwts. 1 grain. We have also a pare of men engaged stripping down side in the back of this level, in which the lode is 1 foot wide. No assay made. The lode in the stope in the back of the 780 feet level north is 2 feet wide, assaying 4 dwts. 13 grains. The 620 feet level end north of crosscut has been driven 1 foot 6 inches, making a total distance driven of 214 feet. The lode is 6 inches wide, assaying 3 dwts. 22 grains. The winze in the bottom of this level has been sunk 8 feet, making a total depth of 16 feet. The lode is 3 feet wide, assaying 13 dwts. 16 grains. There are two stopes in the back of this level, the average width of the lode being 2 feet 6 inches, giving an average assay of 1 ounce 5 dwts. 10 grains. The rise in the back of the 620 feet level south of cross cut has been put up 15 feet, making a total height of 91 feet. The lode is 1 foot 6 inches wide, assaying 4 dwts. 13 grains. In the 620 feet level south the lode in the stope in the back of this level is 2 feet wide, assaying 6 dwts. 12 grains. The 466 feet level north, No. 1 cross cut east, has been driven 2 feet, making a total distance driven from the main level of 60 feet. The rise in the back of the 400 feet level north of cross cut has been put up 18 feet 6 inches, making a total height of 77 feet. The lode is 4 feet wide, assaying 6 dwts. 12 grains. In Taylor's shaft, 400 feet level north, there are two stopes in this level. The average width of the lode being 3 feet, giving an average assay of 5 dwts. 5 grains. Gilbert's shaft, 650 feet level north, has been driven 19 feet, making a total distance of 219 feet 6 inches. In the 520 feet level north the lode in the stope in the back of this level is 3 feet wide, assaying 1 ounce 0 dwt. 21 grains. The rise in the back of this level has been put up 20 feet, making a total height of 40 feet. The lode is 1 foot 6 inches wide, assaying 7 dwts. 19 grains. In the 520 feet level south the lode in the stope in the back of this level is 1 foot 6 inches wide, assaying 6 dwts. 12 grains. In the 360 feet level north there are two stopes in this level. The average width of the lode being 2 feet, giving an average assay of 1 ounce 4 dwts. 3 grains. In the 290 feet level the rise in the back of this level has been put up 12 feet, making a total height of 25 feet. The lode is 1 foot 2 inches wide, assaying 6 dwts. 12 grains. There are two stopes in the back of this level, the average width of the lode being 2 feet 3 inches, giving an average assay of 1 ounce 4 dwts. 3 grains. In the 290 feet level south there are two stopes, the average width of the lode being 2 feet 7 inches, giving an average assay of 5 dwts. 5 grains. Tennant's shaft has been sunk 10 feet, making a total depth of 44 feet 9 inches below the 520 feet level. The lode is 1 foot 6 inches wide mixed, assaying 4 dwts. 13 grains. The rise in the back of 520 feet level north has been put up 8 feet, making a total height of 13 feet. The lode is 7 feet wide mixed, assaying 13 dwts. 1 grain. There are two stopes in this level, the average width of the lode being 4 feet, giving an average assay of 1 ounce 13 dwts. 8 grains. The winze in the bottom of the 360 feet level north south of crosscut has been sunk 5 feet 6 inches, making a total depth of 7 feet 6 inches. The lode is 1 foot 6 inches wide, assaying 7 dwts. 19 grains. The 290 feet level south, south of crosscut, has been driven 4 feet, making a total distance driven of 55 feet. The lode is 7 inches wide, mixed and poor. The lode in the stope in the back of the 290 feet level south north of crosscut is 10 inches wide, assaying 13 dwts. 1 grain. Schaw's shaft, 450 feet level north, crosscut east has been driven 2 feet 6 inches, making a total distance driven of 10 feet. The No. 3 rise in the back of this level has been put up 16 feet 6 inches, making a total height of 65 feet. The lode is 6 inches wide, assaying 7 dwts. 19 grains. The winze in the bottom of this level has been sunk 2 feet 6 inches, making a total depth of 59 feet 6 inches. The lode is 9 inches wide, assaying 10 dwts. 10 grains. The lode in the stope in the back of this level is 1 foot wide, assaying 19 dwts. 14 grains. In the 450 feet level north, south of cross cut, the end has been driven 1 foot 6 inches, making a total distance driven of 311 feet and suspended. The machine has been put to rise in the back of the level 6 feet from the present end, and has been put up 9 feet on a lode 2 feet wide, assaying 1 ounce 18 dwts. 3 grains. The lode in the stope in the back of this level is 1 foot 6 inches wide, assaying 9 dwts. 2 grains. In the 320 feet level north the winze in the bottom has been sunk 3 feet, making a total depth of 138 feet 3 inches. The lode is 1 foot wide mixed, assaying 3 dwts. 6 grains. In the 320 feet level north of cross cut the rise in the back has been put up 9 feet, making a total height of 26 feet 6 inches. The lode is 1 foot 9 inches wide, assaying 5 dwts. 5 grains. The lode in the stope in the back of this level is 1 foot wide, assaying 9 dwts. 18 grains. In the 320 feet level south of cross cut the end has been driven 3 feet, making a total distance driven of 150 feet. There is nothing here to report. The lode in the stope in the back of this level is 1 foot 6 inches wide, assaying 5 dwts. 5 grains. In the 220 feet level north the end has been driven 3 feet 3 inches, making a total distance driven of 234 feet 9 inches.—Mc Taggart's Shaft: 320 feet level north; This end has been driven 15 feet 6 inches, making a total distance driven of 137 feet 6 inches. The lode is small and poor.—Glen Shaft: 250 feet level north: This end has been driven 15 feet 9 inches, making a total distance driven of 1262 feet 3 inches. There is nothing here to report. The cross cut east at this level has been driven 2 feet 8 inches, making a total distance driven of 228 feet.—Ribblesdale's Shaft: This shaft has been sunk 12 feet, making a total depth of 213 feet. In the 1060 cross cut west the end has been driven 21 feet 6 inches, making a total distance driven of 357 feet.—William's Shaft: The cross cut east from the shaft at the 173 feet level has been driven 3 feet, making a total distance driven of 19 feet 6 inches.—East Prospect Shaft: Driving south from end of No. 2 cross cut, this has been driven 32 feet, making a total distance driven of 100 feet. The health of the camp is very good.

MOUNT LYELL.—Report for week ending February 7th: The western crosscut in the engine shaft at the 100 feet level has been driven 13 feet, total 28 feet. The western crosscut from the south chamber 50 feet level has been driven 8 feet through ironstone. Stoping on the ore body north of the shaft has been carried on as usual, and 9 tons 14 cwts. of good grade ore broken and raised. The timbering of the level has also been finished. Have sunk the No. 2 shaft 2 feet, total 75 feet 6 inches. Timbered 12 feet, total 73 feet. The country continues hard, and the inflow of water is increasing. Have driven the No. 5 tunnel 31 feet for the week, total 218 feet. Progress slow.—Ore: 202 bags of ore, weighing 9 tons 14 cwts., and containing 14,084 ounces of silver, have been raised. 110 bags, weighing 6 tons 2 cwts. 3 qrs. 1 lb., containing 10,940 ounces of silver, have been taken away by the packers. Making good progress with the new road, having completed 45 chains of forming, 12 chains of corduroying, and all the clearing with the exception of a few chains at the mine end. Latest advices also state the quantity of ore raised from the winze and engine shaft in No. 4 tunnel as follows, viz.:—270 tons 19 cwts. 2 qrs. 4 lbs., containing 338.454 ounces of silver and 54 tons 8·78 cwts. of copper, or an average of 1270 ounces of silver and 20·4190 of copper per ton of ore.

NUNDYDROOG.—F. W. Grey, March 7: Report of work done for the month of February: Taylor's shaft sunk 6 feet by hand labour, total depth 1009 feet. We are now sinking here with a rock drill. 1000 feet north driven 65 feet 6 inches, total length 275 feet. The lode is still very small, not more than 2 inches in width; there is a little water coming from the footwall side. 1000 feet south driven 40 feet, total length 147 feet. The lode is small here also, being 6 inches wide, assaying 7 dwts. 12 grains per ton. We are now driving this end by hand labour, and have put the machine to work in the shaft. As soon as the north drift holes the 840 winze we will again drive this end with a machine. 840 feet north, winze in bottom sunk 35 feet 6 inches, total depth 124 feet. We hope to hole to the 1000 north in March. 840 north stope in back, ground stoped 20 fathoms. The lode averages 3 feet in width, part of it being mixed with country rock; the assay value is 17 dwts. 6 grains per ton.—840 north, rise against main shaft: We put a rock drill to work here during the last week in the month, as we had cut water in sinking below the 760, and could not make any progress. We rose 5 feet, total height 42 feet 6 inches. We hope to communicate about the end of March. 840 north stope in bottom, ground stoped 12 fathoms in a lode 5 feet wide, assaying 16 dwts. 6 grains per ton. 760 north stope in bottom, ground stoped 9 fathoms in a lode 4½ feet wide, assaying 15 dwts. per ton. 680 north driven 33 feet, total length 66 feet. We have now two rock drills here, and shall push on the drive as speedily as we can; there is a little water in the end. 520 north No. 2 winze sunk 9 feet 6 inches, total depth 43 feet, and drive south 11 feet 6 inches when we holed the 600 rise. The quartz is 1½ foot wide, assaying 14 dwts. 12 grains per ton. Main shaft sunk 20 feet completing the shaft to the 760 level, and we also commenced cutting plat below the 760. We cut a floor, however, which has drained all the water from the level, so we have driven north 6 feet, and fixed a small Cameron pump there, we have now resumed sinking. Kennedy's shaft sunk 14 feet, total depth 511 feet, we were delayed here 4 days owing to our having to repair the pump rods. We hope to be driving at the 520 level in about a fortnight. 440 south driven 25 feet, total length 187 feet. The lode is very small, 3 inches, assaying 4 dwts. 6 grains per ton. 440 north, No. 3 rise in back risen 47 feet, total height 47 feet. We hope to hole the 370 winze in a few days. The lode is 1½ foot wide assaying 1½ ounce per ton.—440 north, stope in back. Ground stoped 30 fathoms in a lode averaging 1½ foot wide, and assaying 2 ounces per ton. 370 north, stope in back. Ground stoped 5 fathoms in a lode 1 foot wide, assaying 1 ounce 6 dwts. per ton. 370 north, stope in bottom. Ground stoped 15 fathoms. The lode is about 5 feet wide, assaying 1 ounce 12 dwts. 12 grains per ton. The roof is very heavy, and requires a lot of timber. 370 north No. 2 winze sunk 7 feet, total depth 7 feet. The lode is 6 inches wide, assaying 15 dwts. We ought to hole the 440 rise shortly.—North shaft: This shaft has been holed to the 300, and we are now fixing skip road, &c., below the 160. We are hauling quartz to surface from that level. The drives, stopes, &c., working by hand labour are as follows:—920 north drive ground cut 11 feet. Lode 6 inches wide, assaying 6 dwts. 12 grains. 920 south drive ground cut 10 feet: size of lode 8 inches, assaying 4 dwts. 6 grains. 760 south No. 1 back stope ground cut 24 feet. Lode 1 foot wide, assaying 1 ounce 0 dwts. 12 grains. 680 north winze ground cut 10 feet. Lode 6 inches wide, assaying 10 dwts. 18 grains. 680 north No. 1 back stope ground cut 45 feet. Lode 2 feet wide, assaying 14 dwts. 680 north No. 2 back stope ground cut 15 feet. Lode 1 foot wide, assaying 9 dwts. 18 grains. 680 north No. 1 bottom stope ground cut 25 feet. Lode 1 foot wide, assaying 12 dwts. 680 south No. 1 bottom stope ground cut 10 feet 6 inches. Lode 6 inches wide, assaying 7 dwts. 600 north No. 1 back stope ground cut 26 feet. Lode 1 foot 3 inches wide, assaying 9 dwts. 18 grains. 600 north No. 2 bottom stope ground cut 20 feet. Lode 1 foot 6 inches wide, assaying 1 ounce 14 dwts. 18 grains. 600 north No. 3 bottom stope ground cut 20 feet. Lode 1 foot 6 inches wide, assaving 10 dwts. 18 grains. 600 north No. 4 bottom stope ground cut 30 feet. Lode 1 foot 6 inches wide, assaying 8 dwts. 18 grains. 600 north No. 5 bottom stope ground cut 22 feet 6 inches. Lode 1 foot wide, assaving 17 dwts. 6 grains. 600 north No. 6 bottom stope ground cut 16 feet 6 inches. Lode 1 foot 6 inches wide, assaying 15 dwts. 520 north No. 1 bottom stope ground cut 21 feet 6 inches. Lode 1 foot wide, assaying 10 dwts. 520 north No. 2 bottom stope ground cut 16 feet. Lode 1 foot wide, assaying 9 dwts. 6 grains. 520 north No. 3 bottom stope ground cut 19 feet 6 inches. Lode 1 foot 6 inches wide, assaying 1 ounce 12 dwts. 12 grains. 520 north No. 4 bottom stope ground cut 12 feet. Lode 1 foot wide, assaying 6 dwts. 12 grains. 520 north No. 5 bottom stope ground cut 35 feet. Lode 2 feet wide, assaying 1 ounce 3 dwts. 18 grains. 520 north No. 1 back stope ground cut 12 feet. Lode 1 foot wide, assaying 8 dwts. 520 north No. 2 back stope ground cut 16 feet. Lode 1 foot wide, assaying 9 dwts. 6 grains. 450 north No. 3 bottom stope ground cut 24 feet 6 inches. Lode 1 foot 6 inches wide, assaying 7 dwts. 450 north No. 4 bottom stope ground cut 17 feet. Lode 1 foot wide, assaying 16 dwts. 6 grains. 370 north No. 1 bottom stope ground cut 20 feet. Lode 1 foot wide, assaying 14 dwts.—Kennedy's: 95 north No. 1 bottom stope ground cut 27 feet. Lode 1 foot wide, assaying 8 dwts. 18 grains. 95 north No. 2 bottom stope ground cut 10 feet. Lode 1 foot 3 inches wide, assaying 9 dwts. 18 grains. 160 south No. 1 back stope ground cut 13 feet 6 inches. Lode 6 inches wide, assaying 18 dwts. 12 grains. 160 south intermediate ground cut 10 feet. Lode 4 inches wide, trace. 300 north No. 1 rise and stope ground cut 18 feet 6 inches. Lode 2 feet wide, assaying 19 dwts. 12 grains. 300 south No. 1 rise and stope ground cut 3 feet 4 inches. Lode 1 foot 6 inches wide, assaying 12 dwts. 300 south No. 2 back stope ground cut 5 feet. Lode 1 foot wide, assaying 13 dwts. 370 south rise and stope ground cut 4 feet. Lode 3 inches wide, assaying 5 dwts. 12 grains. 370 south drive ground cut 7 feet. Lode 6 inches wide, assaying 4 dwts. 6 grains. 370 north rise and stope ground cut 6 feet. Lode 1 foot wide, assaying 14 dwts. 440 north No. 2 rise ground cut 9 feet, lode 1 foot wide; and 440 north stope in back ground cut 3 feet, lode 1 foot wide: assay 17 dwts. 6 grains. 440 north No. 1 rise and stope ground cut 9 feet. Lode 2 feet wide, assaying 18 dwts.—Mills: Both mills and tailings machinery have been running well.—Health: The general health of the camp is good.—Mill samples: Old mill samples: Rough quartz through stonebreaker 1 ounce, smalls 15 dwts., tailings 4 dwts. 6 grains.—New mill samples: Rough quartz through stonebreaker 16 dwts. 6 grains., smalls 13 dwts., tailings 4 dwts.

NINE REEFS.—Fortnightly report of mine agent, dated 7th March:—Vyvyan's Shaft: We continue to make good progress in the sinking of this shaft, which has been further deepened 8 feet 11 inches; total depth below the 380 feet level 43 feet 2 inches. The ground has somewhat improved since my last report, and the lode matter, which is about 2 feet wide, composed principally of schist, with small veins and patches of quartz and carbonate of lime, and pyrites intermixed. Although at present it is of no commercial value, it looks promising to improve in depth. The 380 feet level south has been driven 4 feet 10 inches; total distance from shaft 59 feet. There has been no change of importance in this end since my report of the 21st ult. The ground is hard, and the lode matter is narrow and unproductive.—The 300 feet Level South: The winze

sinking in the bottom of this level has been sunk 8 feet, total depth below the level 34 feet 10 inches. The lode is about 2 feet 6 inches wide, composed of schist, carbonate of lime, a little sulphur pyrites, and carrying a leader of quartz from 3 inches to 5 inches wide. A sample broken from this yesterday gave by assay 5 dwts. 2 grains of gold per ton. The 220 feet level south has been advanced 1 foot 5 inches, total distance from shaft 420 feet 5 inches. The driving of this level has been discontinued for the present, and the men put to drive a crosscut west to ascertain if there is a better part near in that direction. The crosscut has been driven 12 feet 10 inches, and for this distance it has been through lode matter, with numerous small stringers of quartz and carbonate of lime, but of no value. I purpose driving about 20 feet unless we meet with the clean country rock before.—Bennett's shaft: The crosscut west at the 145 feet level north of this shaft has been driven 10 feet 7 inches, total distance from level 152 feet 7 inches. There has been no change of importance here since my last report; the ground continues of a congenial character, and letting out a little water. South shaft has been sunk 8 feet 7 inches, total depth from surface 96 feet 7 inches. The ground during the past fortnight has been more stratified and not so hard, containing veins and patches of white quartz which are not gold bearing. We shall soon have to suspend the sinking for a time in order to timber the bottom part of the shaft, but I shall continue the sinking as long as possible. —Surface: The tubes for the boilers were delivered on the mine on Friday. The large boiler is fixed, and the engineers are now connecting the steam pipes, &c., and the re-tubing of the boiler is being done as quickly as possible. There is nothing to call for remark in any of our other surface work. Our machinery and p'twork are in good order and working satisfactorily.—Health: I am pleased to say the health of the camp is good, but the weather is getting very hot.

OSCAR GOLD.—The following report has been received from the mine, dated Haugesund, March 21: Hodgkinson's lode: The only alteration in the mine since last writing you to call for attention is the improvement in the 200 north. On Monday the men struck in this working a run of quartz averaging about 10 inches in width, containing galena, copper pyrites, and some visible gold. The quartz is of good quality and looks like increasing in width as we push forward. We have kept the mill running during the week, but have to shut down now owing to Easter until Tuesday next, rather an inconvenience. We are still very short of miners.

ORITA.—H. J. Prender, February 19: Operations: We are washing steadily at the branch. We have had very heavy rains, but no damage beyond the loss of 12 hours. From appearances the gravel at the branch looks most similar to what we had in the channel. The gravel in the channel or deepest part of the mine at present pans out very poor, and for this reason we are doing better on the rim or at the branch.

QUEEN'S BIRTHDAY UNITED.—The directors have received the following mail advice from Mr. W. T. Hansford, the company's local secretary at Danolly, dated February 19: Main shaft: The water has been mastered to the 600 feet level, and at the 500 feet level men are now engaged taking out a trial crushing from a reef which had been passed by in the olden days. The stone here is at present about 2 feet wide, full of mineral, with gold frequently seen in the solid. If this should prove to be payable, then there is a large quantity of stone in sight ready to be broken out.—Centre shaft: The machinery is being put in order, new poppet legs erected, the shaft repaired, new patent cages ordered, and all necessary work in hand prior to starting work below, where it is believed from known prospects, that some payable stone will be obtained from the reef going north, between the 200 and 300 feet levels, which latter level it is proposed to extend in order to work the shoot of stone in which gold is to be seen. Prospecting work is also being carried on south of the main shaft. Belgium and Perseverance Mines give promise of good returns for any outlay expended. The contractors new shaft is placed and situated between the Belgium and Perseverance lodes, and from which it is intended that both shall be worked. The crosscut to the Belgium from the bottom of the new shaft has been driven 50 feet. It is estimated that 70 feet more driving will reach the course of the lode, after which a level will be run along its course, and every preparation made for taking out stone.

SOUTH-EAST MYSORE.—Fortnightly report of Captain M. Scantlebury, mine agent, dated March 7: Beresford's shaft has been sunk 9 feet, which now makes a depth of 69 feet 9 inches on the course of the lode, and 167 feet 6 inches from surface. The lode is 5 feet wide, 2 feet of which is solid dark blue quartz worth from samples taken 10 dwts. and 12 dwts. 10 grains of gold to the ton. The remaining part of the lode is quartz intermixed with black rock and iron pyrites, worth according to assay 4 dwts. 9 grains 6 dwts. 12 grains, and 3 dwts. 6 grains of gold to the ton. Pigott's shaft has been sunk by hand labour 8 feet, now 145 feet 6 inches from surface. The rock is very hard, but we are doing our best to reach the lode as quickly as possible. We have according to levelling 20 feet more to sink to strike the lode.—Surface: The loading for air compressor is well nigh completed. The masons will commence to build a chimney in a day or two, and the engineers the erection of the air compressor.

SANTA BARBARA.—The directors of the Santa Barbara Gold Mining Company (Limited) are in receipt of advices from Mr. T. S. Treloar, dated Pari, 4th and 17th February: The mineral delivered at the spalling floors from the mine during the month of January amounted to 754 tons, of which 151 tons were rejected as refuse stone and 603 tons treated at the stamping mills. The total produce obtained was 1943 oitavas of amalgamated gold, or equal to 3·222 oitavas per ton stamped. This produce of 1943 oitavas of gold, valued at 8s. 6d. per oitava, amounts to £825 15s. 6d. sterling, and the estimated cost for the month, at Exchange 10¾d., amounted to £1020 1s. 8d., thus showing an apparent loss of £194 6s. 2d. for the month of January; against this amount, however, of £194 6s. 2d., should be calculated an estimated gain of about £230 during January in respect of difference in Exchange, thus leaving a balance of £35 13s. 10d. as estimated profit for the month. The mine captain reports as follows for January: No. 8 stope south has been extended 1 fathom 4 feet. The lode has averaged about 6 feet wide, but 3 feet of this has been sandstone and hornblende, and at the end of the month the productive part towards the top of that stope has become more intermixed with the latter. The mineral obtained from the productive part of the lode has been of fair quality. No. 9 stope south has been extended 2 fathoms 2 feet. The lode has gradually contracted during this stoping, and at the end of the month it averaged only 6 feet wide; 3½ feet of fair quality, the remainder being chiefly sandstone.—No. 9 stope north: The north end of the shaft for 12 feet in height has been extended 3 feet in a lode 6 feet wide at the top and 9 feet at the bottom; 2 feet for the whole height has been sandstone and hornblende, the remainder being fairly good mineral. Sinking in the shaft, No. 9 winze, and the No. 9 end south were under suspension throughout the month for want of explosives.—Timberwork: The timbermen have been engaged cutting hitches and headings for the logs as required, repairing bucket rods, laying tramroads, repairing skip and tram roads where required, also plat, and landing brace sollars, changing sockets in wire ropes, and pumping water from tanks and from Holland's shaft. Six logs have been put in the No. 8 stope to keep up shales of ground, one log put in No. 8 stull and lathed with candela poles and loaded with unproductive stone to carry tramroad bottom No. 7 level, two logs put in No. 9 stope and lathed with candela poles and loaded to carry road in bottom of No. 8 level, laying 10 feet run of tramroad in No. 8 level, laying 10 feet run of tramroad in No. 8 level, changing 14 feet run in same, repairing No. 8 plat and landing brace sollars, renewing 40 feet run side runner on skip road, and repairing bracket rods, also refixing six sockets in wire ropes. The output of stone from the mine is 1224 wagon loads of which 666 came from the No. 8 stope, 398 from the No. stope south, and 160 from the No. 9 stope north. The number of wagon loads per man drilling is 35·44, and the total number of holes drilled in the mine 1353, of which 674 were in the No. 8 stope, 522 in the No. 9 stope south, and 157 in the No. 9 stope north.

TASMANIA CROWN.—Manager's report, February 16: Main shaft, No. 1 level east was extended to 35 feet, and then set on contract. It is being pushed ahead rapidly, and I expect 40 feet will be driven and timbered this week. The No. 2 level west was extended a further distance of 5 feet 6 inches, making 242 feet 6 inches from shaft. The ground became so hard that the contractors found it impossible to carry it on at their price, and it was decided to discontinue driving and await the arrival of the Diamond drill. The face has been squared up and a chamber cut to receive the machinery which is expected to be here some time during next week.—Prospect shaft: The proposed alterations to the pump have been made, and it now holds the water with ease. Total depth to date 61 feet 6 inches. The ground is soft and broken with occasional seams of ore. It is intended to sink this shaft another 25 feet, which will bring us to the level of No. 1 cross cut when we shall be enabled to connect and treat the water with our main pumps, and make further explorations east from the Prospect shaft. No. 2 Prospect shaft sinking of this was stopped by an influx of water at 34 feet 6 inches. As soon as we have made the necessary connections to convey the water from No. 1 Prospect shaft to our main shaft the pumping appliances now in use there will be at liberty, and they can be removed to No. 2 shaft, and sinking resumed. In the drive north from No. 2 level east men are now employed in clearing out this drive and breasting up face in order if possible to bore and tap the water without bringing away the debris. If the water can be brought away we can continue driving eastward towards the lode.—Geo. R. Tilly, manager.

TOLIMA.—The directors have received advices by the mail of the 22nd March, from their mines, of which the following is an abstract: —Frias January returns, 200 tons (silver estimated at 30 11-16d. per ounce), £10,600 11s. 4d.; cost, £5189 7s. 4d.; profit, £5411 4s. The underground agent reports 89 fathoms 4 feet of ground expended, of which 61 fathoms 4 feet 8 inches were productive, leaving of unproductive ground 28 fathoms 0 feet 8 inches. The superintendent, writing under date of 16th February, says:—At the present date the 140 fathom east end has improved somewhat in yield of mineral, and we may expect a further improvement upon coming in contact with the branch left on the hanging wall. He further writes, in reference to the decline in the 90 fathom east end: I am in hopes this falling off may prove to be only temporary: and continues, the stopes have continued to yield very well during the month.—Engine shaft: This was cut down 15 feet, and is now 43 feet as completed below the sole of the 120 fathom level. By the end of the current month we shall hope to finish this to the 130 fathom, after which we shall proceed to sink the shaft below the 130 fathom level to make room for the plunger pump and tip platt. 140 fathom west end was driven 6 feet from west end of winze, by two men at $85 per fathom, and yielded 5 cwts. of mineral per fathom. The lode is rather tight, and the mineral scattered in broken patches. 140 fathom east end was driven 9·8 feet from east end of winze, by four men, at $80 per fathom, and yielded 10 cwts. of mineral per fathom. In starting this it was practically poor, but as it advanced it became more productive and the lode more regular and defined. 130 fathom west end was driven 18 feet by four men and a boring machine at $70 per fathom, being 233·7 feet as total west of winze, and is without change to note. 130 fathom east end was driven 5·1 feet by two men at $65 per fathom during a part of the month, and is 232 feet as total east of winze. 130 fathom east end north branch was driven 7·2 feet by two men at $65 per fathom. It is situated about 8 fathoms behind the above end, and is a portion of the main lode. It is proposed to drive on this in order to prove its value. 120 fathom west end was driven 14·7 feet by two men at $35 per fathom, being 525·5 feet as total west of the engine shaft, and is without change to note. 120 fathom west back stopes No. 1 were stoped 15 feet by four men at $30 per fathom from the south part of the lode, and yielded well. 120 fathom east end from cross cut was driven 7·5 feet by two men at $55 per fathom, being 55 feet as total east of cross cut, and is unchanged. 120 fathom east back stopes No. 1 were stoped 6 feet, on company account, during a part of the month, and yielded well. 110 fathom east end was driven 28·8 feet by four men and a boring machine at $70 per fathom, being 665·7 feet as total east of the engine shaft. The lode during the greater part of the month produced some very rich portions of high grade mineral, but at present it shows a decline, yet prospect good. 110 fathom east cross branch was driven 7·8 feet by two men at $65 per fathom, and yielded 1 ton of mineral per fathom. 110 fathom east of back stope No. 1 was stoped 24 feet by two men at $25 per fathom, and yielded well. 110 fathom east back stope No. 1A was stoped 14·1 feet by four men at $30 per fathom, during a part of the month, and yielded well. 110 fathom east back stope No. 3 was stoped 58·3 feet by six men at $23 per fathom, and yielded well. 110 fathom east back stope No. 3A was stoped 40·8 feet by four men at $21 per fathom, and yielded well. 110 fathom west back stopes, No. 1, were stoped 24 feet on company account, and yielded as usual. 110 fathom west back stopes, No. 2, were stoped 58·3 feet by four men, at $25 per fathom, and yielded as usual. 100 fathom east back stopes were stoped 60 feet by four men, at $16 per fathom, and yielded well. 100 fathom east sink was sunk 3·8 feet, and is holed to the 110 east stope No. 3. It yielded 4 tons of mineral per fathom. 90 fathom east end was driven 18·1 feet by four men at $55 per fathom, being 799·9 feet as total east of the engine shaft. The lode improved very much during the month, and yielded on an average 2 tons of high grade mineral per fathom, but at present it shows a decline. 90 fathom east back stope was stoped 12 feet on company account. It is situated just behind the above end. 90 fathom east end (Welton's lode) was driven 21·3 feet by four men and a boring machine, at $70 per fathom, and is without change to note. 80 fathom east stopes were stoped 6 feet by four men, at $27 per fathom, and yielded 2 tons of mineral per fathom. They are situated from the east end of the 80 east winze upon the north part of the lode. Shallow adit was driven 9 feet by four men, at $53 per fathom, during a part of the month, and is 1104·1 feet as total distance from mouth. It is now being driven in a southerly direction in order to cross cut for the lode. Straightening mouth of shallow adit was driven 40·2 feet by four men, at $38 per fathom. Cross cut to new lode was driven 8 feet by two men, at $95 per fathom, being 372·3 feet as total length, and remains hard and tough to work.—Real de Frias: Deep adit west was driven 31·5 feet by four men at $50 per fathom, and is 385·9 feet as total west of shaft. The lode has continued rather promising, and during the last few days it has given some good stones of mineral. Old Spanish cross cut was cleared 96 feet, being 216 feet as total length, and at this point it intersects the lode. We also cleared 50 feet upon the course of the lode.

JAPANESE COAL IN BOMBAY.—Referring to the then recent arrival of the *Hiroshimamaru* in Bombay, an Indian exchange says:—"It is expected that the annual delivery of Japanese coals here will not fall far short of 40,000 tons. Should the exigencies of the busy season (January to June) demand it, additional intermediate steamers will be put on. The shipment received a fortnight ago has been tried at the mills of Messrs. Tata and Sons and others, and although there has scarcely been time to make a complete test, the experiment has been, on the whole, satisfactory, and has to some extent justified the high reputation the Japanese coal has with navigators of the Chinese seas as a serviceable steam coal. Messrs. Tata have been using the fuel in a boiler where equal proportions of Cardiff and Davison (the two best English importations) have hitherto been used, and it was found that the consumption was not more 8¼ per cent. higher than in the case of the English combination. As the price of the Cardiff and Davidson is at present Rs. 20 or Rs. 22, respectively, as compared with Rs. 14, the present quotation for Japanese, it is claimed that a saving of 50 per cent. can be effected by the use of the latter. It must not, however, be forgotten that the disorganisation of the trade at home caused by the strike, now happily terminated, has brought up the price of the English exports some 30 per cent. or more. Bengal coal (which is said to be 20 per cent. inferior to the Welsh) is quoted slightly below the Japanese fuel, but we are informed that traders who have used both the Bengal and Japanese are repeating their orders for the latter, which it is claimed is an indirect testimony to the superiority of the imported commodity. —*Hyogo (Japan) News.*

REPORTS UPON MINERALS, TRADE, &c.

THE COPPER MARKET.

MESSRS. JAMES LEWIS and SON'S mid-monthly report on copper, dated Liverpool, March 16, says:—Good merchantable copper closes to-day 13s. 9d. per ton higher than on the 2nd inst. From £40 12s. 6d. for cash it receded to £40 on the 6th inst., from which point it has steadily advanced to £41 6s. 3d. for cash and £41 16s. 3d. for three months prompt. About 2000 tons of American argentiferous pig copper have been sold on the spot and to arrive on private terms. In best selected a considerable business has been done at £44 10s. to £44 per ton, the 1000 tons required by the Admiralty being purchased at the former price, but there are again buyers at £44 10s. per ton. Very little furnace material is available at present, and sales have been very limited. In the New York quotations for Lake Superior ingots there is a decline to 9·50 to 9·62½ cents per lb., which is, however, considerably above the value here. The effect of the reduced American shipments to Europe last month is seen in a decrease of 1349 tons in the English and French stocks during the past fortnight.

The returns made by European and American producers are as follows:—

	January 1894. Tons.	February 1894. Tons.	Previous 6 months. Tons.
European Production	8,110	7,217 ...	40,691
American Production	10,832 ...	10,245 ...	67,290
American Imports	1,340 ...	1,340 ...	6,252
American Exports...	7,717 ...	5,590 ...	60,026

Stocks have decreased 1349 tons, and the visible supply 1467 tons during the past fortnight. Imports to date are 12 tons greater, and deliveries 2480 tons less than last year. The arrivals in England and France for the fortnight have been 2472 tons, and the deliveries 3821 tons. The arrivals of Chile in Liverpool and Swansea have been 437 tons and the deliveries 562 tons, and from other countries 1376 and 2564 tons fine respectively. The arrivals here and in Swansea from the United States have been 512 tons bars, 192 tons ingots, and 44 tons matte, equal to about 715 tons fine, and in France 75 tons fine. The Chile Charters for the past fortnight are advised as 750 tons, and exchange is 13½d.

Messrs. HENRY BATH and SON'S fortnightly copper report, dated March 17, 1894, states:—The Chili charters for the first half of March are advised as 750 tons fine copper. The latest exchange is 13d. In the afternoon of the 2nd instant the value of G.M.B.'s dropped away to £40 10s. cash, and on the 5th to £40 5s. On the 6th, under the influence of a failure on the Metal Exchange, considerable business took place at £40, but a demand developing itself, the price was carried to £40 13s. 9d. on the following day. A fall of 3s. 9d. on the 9th was followed by a rise of 7s. 6d. on the 12th, and by a further improvement of 5s. on the 14th. Yesterday morning on the improved figures a little enquiry arose, and in the afternoon the price was carried to £31 6s. 3d. and £41 17s. 6d three months. The home markets have been extremely dull, but there is now a slightly better demand. There is no business passing with India. The position in the United States remains unchanged; the monthly consumption there at the present time may be estimated at about 4000 tons. About 3000 tons of argentiferous copper have been sold for delivery here. The exports for the first half of March are advised as 3478 tons. Some uncertainty exists as to the United States copper figures as three of the largest concerns there make no returns. The estimate of stocks on the 1st. January, 1894, has now been increased to 37,411 tons. Production and imports for 1893 stand at 153,104 tons, exports at 85,267 tons, and apparent home consumption at 85,171 tons. Outside of our figures, the arrivals and deliveries at Hamburg, Rotterdam, and Antwerp amount to about 2017 tons. Imports of American copper into England have been 815 tons, and into France 75 tons, or 890 tons against 658 tons last year. Total actual deliveries have been 3822 tons against 2472 tons imports. The stocks have decreased 1350 tons. Total visible supply shows 46,164 tons against 47,364 tons last fortnight. Furnace material is again in rather short supply, and there is a little better demand for it. Transactions comprise about 200 tons of Indian, Mexican, and Chili ore at 7s. 4½d. to 7s. 6d.; 1000 to 1500 tons of Mason and Barry's yellow ore at 7s. 6d.; 200 tons of Chili regulus at 8s. 1½d; and 100 tons of Soteil precipitate at 8s. 3d. per unit.

Messrs. HARRINGTON and Co.'s copper report, dated Liverpool, March 15, has the following:—Chili charters for the past fortnight are cabled as 750 tons, making the total since 31st December last 4000 tons, against 4000 tons same time last year. Exchange 13¼. During the past fortnight the market for G.O.B.'s and G.M.B.'s has been active, and about 8000 tons have changed hands. Prices opened at £40 15s. cash and £41 3s. 9d. three months, and declined till £40 1s. 3d. and £40 12s. 6d. respectively was touched on the 6th inst. We then had an improvement, and values advanced with slight checks till £41 2s. 6d. and £41 13s. 9d. was paid for cash and three months, closing easier with sellers at £41 1s. 3d. and £41 11s. 3d. respectively.—Silver: It is understood that the whole of the £100,000 in this metal consigned here a few years ago by the Chilian President, Balmaceda, has now been sold at a loss of £40,000 compared with the price that could have been originally obtained. The following are the returns of the Copper Producers' Committee:—

	February.	8 Months.	Maximum allowed for eight months under the old agreement.
European production.....	7,217 ...	56,061 ...	56,679 tons
American production.....	10,245 ...	88,867 ...	88,478 "
American from pyrites, &c....	1,340 ...	8,932 ...	9,673 "
Total	18,802 ...	153,360 ...	149,830 "
American exports	5,590 ...	73,333 ...	26,666 "

The total stocks in Liverpool, Swansea, London, and Havre are 42,414 tons, against 43,764 tons on the 28th ult., a decrease of 1350 tons for the fortnight. The stocks include about 800 tons of copper sold, but not yet delivered to smelters. The visible supply for the fortnight is 46,153 tons, against 47,454 tons on the 30th ult., showing a decrease of 1301 tons. The stock of English G.M.B.'s in Liverpool remains at 4 tons. Refined and manufactured sorts are steady. Quotations being: Tough cake £42 10s. to £43, best select £43 to £44, Indian sheets £48 10s., strong sheets £51 to £52, and yellow metal sheet 4 7-16ths per lb. The sales of furnace material comprise —54 tons Chili copper ore at 7s. 6d., 114 tons Mexican ore at 7s. 6d., 57 tons Indian ore at 7s. 4½d., 1250 tons Mason's ore at 7s. 6d. per unit for 5 per cent., 15 tons Spanish precipitate at 8s. 3d., 100 tons Sotiel precipitate at 8s. 3d. per unit, and 18 tons argentiferous Peruvian matte on private terms.—Tin: Since our last the market for cash Straits has been irregular in sympathy with silver, prices opened at £65, and fluctuated between £63 15s. and £68 7s. 6d., closing weak at £67 7s. 6d. Australian £68 2s. 6d., English £72 to £72 10s., and Peruvian £55 to £65, according to quality. Sulphate of copper firm, at £18 10s. spot and forward. Lead during the past fortnight has been quiet, and the market closes at £9 3s. 9d. for Spanish, and £9 7s. 6d. for English. —Spelter: The market has been quiet but steady, closing with buyers at £15 15s. for ordinary Silesian brands. Quicksilver has been quiet, and values reduced to £5 12s. per bottle for Spanish. Bar silver: Prices have again been irregular, fluctuating between 27⅞d and 27d. per ounce standard, closing to-day at 27¼d Antimony dull at £36 per ton.

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MR. S. A. WARD, engineer, Tudor-place, Sheffield, is the inventor and patentee of the Ward's Floating Metallic Gland Packing, of which he has a large number at work on winding engines and steam engines, and the saving in coal, friction, and packing is said to be considerable. It is of the simplest construction, and may be used inside any ordinary stuffing box without alteration. The packing pieces, which are four or more in number, are made of anti-friction metal, and are cone-shaped at their lower ends. It is claimed that, in most cases, these packing pieces will wear a number of years without renewing, which, when necessary, can be easily effected by breaking the joint of the gland cover. The packing is held up to the face of the gland cover, and on to the rod by two or more spiral springs, which take their bearings from the bottom of the stuffing box, the other ends are pointed into holes equally divided in the bevelled hoop, which is fitted over the covered portion of the packing pieces, giving an equal pressure in both directions, which is so slight that it is impossible for the springs to break. The springs holding the bevelled hoop up may be very light, as the most they have to maintain is the tightness of the packing against atmospheric pressure in a condensing engine, and, consequently, there is little friction, and no special care is required in lubricating. Triangular pieces form stopping bits, preventing the passage of steam, and keep the section pieces equally spaced. As the packing wears away, these triangular pieces are pressed inwards towards the rod, and maintain a constant fit both with it and with the main packing pieces, and cannot wear loose. There is a joint fitted to the end of the stuffing-box, and the packing cannot be screwed up tight in order to stop a small leak of steam or water, thereby this great cause of cutting and grooving rods is avoided. All parts may be made in halves where it is necessary, and special springs used in place of the spiral springs. All that is necessary in ordering this packing is to give exact size of rod, depth and diameter of stuffing-box, size of flange, number and size of studholes and their centre.

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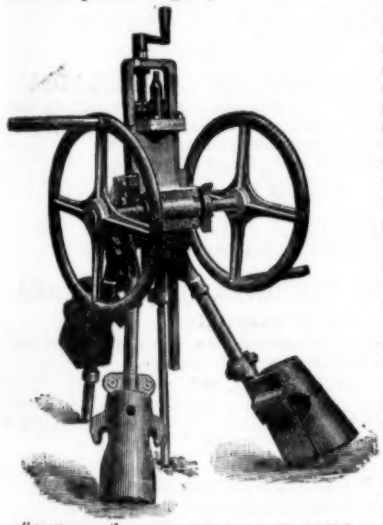
The illustration represents the "Monarch" Hand-Power Rock Drill, mounted on a tripod stand for vertical or horizontal boring. This machine is designed to meet a want long felt, for an effective percussion rock drill which will utilise unskilled manual labour for prosecuting any kind of rock boring for blasting, and is, therefore, especially useful for prospecting in remote situations where steam power is not available, and for starting trial mines where it is not thought desirable to go to the cost of installing an expensive compressed air plant. The machine is very strong, and being portable and not likely to get out of order, it is especially valuable to prospectors, and also to contractors. The construction is simple, the main features being a strong cast-iron cylinder enclosing a powerful volute sheet steel spring (not a spiral wire one), and a steel working rod, to which the drill bit is attached. The fly wheels are fixed on a steel shaft, to which are also fixed two steel cams, each having three hardened points, and as these revolve the points come in contact with and raise a steel bar attached to the working rod, the ends of which project from the cylinder; this in turn compresses the spring, and at the same time raises the working rod and drill bit, and as the cams pass the bar, the spring is suddenly released, and the blow is made. The rotation of the drill bit is provided for by a blade pawl, placed in the front part of the cylinder, which engages with a diagonal toothed ratchet on the working rod, during the backward stroke, and the automatic feed of the machine is effected by the cone at the top of the working rod acting on the feed screw by means of a simple lever arrangement. Mounted on the tripod the machine is easily adjusted to bore at any angle from vertical to horizontal, while for tunneling it can be fitted on a simple type of column, by which a heading can be drilled anywhere from the top to the floor. The two-man power drill is capable of boring in granite at the rate of from 1¼ to 2 inches per minute, two men being able to make an average of 60 revolutions per minute, each revolution making three blows, and each blow being of the weight of about 240 lbs.



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THE NITRATE MARKET.—Mr. Thomson Aikman, jun., reports:—"The fortnight's arrivals for Europe reach about 67,000 tons, of which about 46,000 tons called for orders. Early in the fortnight a large off-coast cargo changed hands at an equivalent of about 9s 5d., and several small cargoes at 9s. 6d. to 9s. 7½d., and, owing to easterly wind and absence of arrivals, a large off-coast cargo subsequently sold at equal to about 9s. 10½d. per cwt., towed to Hamburg, and spot values in continental ports were quoted at up to 10s. to 10s. 3d. per cwt. With more free arrivals and the intervention of the holidays, the tone has become quieter, 9s. 7½d. to 9s. 9d. being about the closing value. In unarrived due cargoes several transactions are reported at 9s. 5d. to 9s. 6½d., in late December at 9s. 3d., early January at 9s. 1½d. to 9s. 3d., February 8s. 10½d. to 8s. 9d., March 8s. 7½d., April-May 8s. 7d. to 8s. 8d., and later sailings at 8s. 7½d. to 8s. 10½d. per cwt., the close being firm, owing to the advanced pretentions of producers and firmer freights. Cable quotations are: Cost 5s. 9d. to 6s. per quintal, exchange 13d., and freights firm at 26s. 3d. to 27s. 6d. per ton, with 32,000 tons register disengaged spot tonnage. The estimated shipments in March are 36,000 tons to Europe and 3000 tons to the United States, with 46,000 tons and 5000 tons respectively loading. The deliveries in Europe for the first half of March exceeded 90,000 tons, and those for the second half, it is expected, will nearly equal this figure. Last year, for all March, the deliveries were 153,000 tons, and in 1892 148,000 tons. The supply in sight for April would barely more than meet deliveries on last year's scale during April, and would be insufficient for a scale similar to 1892."

AUCKLAND CHAMBER OF COMMERCE.—At the annual meeting of the Auckland Chamber of Commerce, held at Auckland on February 22nd, Mr. Adam Porter, in his address from the chair, said in reference to the mining industry:—Our production of bullion for the year shows a slight increase. This is principally due to the returns from the Ohinemuri district, where several mines, owned by English companies, have been producing a fair amount of bullion. Dividends are now being paid by the Waihi and Karangahake Gold Mining Companies. There have been several new finds in this district, which, from present prospects, appear likely to increase the output of bullion during the present year, and a large area of ground is now being taken up, and several new mines are being vigorously worked. At the lower Thames mining has been dull during the past year. Mr. Murray, a mining engineer and geologist of great experience, has been visiting the lower Thames to report on the feasibility of opening up our mines by deep sinking. Up to the present the gentleman's report is not to hand, but I believe it will recommend that the deeper leve's at the Thames should be tested, as there is no known reason why deep mining should not pay as well at the Thames as it has done in other countries; and the Government will, no doubt, help an industry that has done so much for the colony, by placing a sum of money on the Estimates, as has been done in the Australian colonies. Should payable gold be found at greater depth it would give an impetus to trade, not only in this city, but in the whole colony. Therefore, deep sinking should be considered more a colonial than a provincial question. It is to be hoped that the members of this Chamber will take an interest in the development of the great mineral wealth of our provincial district. The dividends paid from various companies during the past year amounted to £33,000.

THE TAUPIRI (N.Z.) COAL MINING COMPANY (LIMITED).—The half-yearly general meeting of the shareholders in the Taupiri Extended Coal Mining Company (Limited) was held on January 26, at the company's offices, Fort-street.—Mr. R. Walker presided, and there was a considerable attendance.—The Chairman laid the directors' report for the half-year ending December 31st last, before the meeting, which showed the profit and loss account for that period, after writing off 5 per cent. for depreciation on the mining property, of £15,717 15s. 2d., viz., £785 17. 9d., showed a net profit of £1186 3s. 4d. The balance brought forward from last half-year, less dividend paid, was £155 18s. 7d., making a total of £1342 1s. 11d., which the directors recommended to appropriate as follows:—£1200 to payment of a dividend of 1s. per share, the balance of £142 1s. 11d. to be carried forward to new account. The profit and loss account showed that the mining expenses, including £200 manager's salary, was £3571, the total expenditure being £4805 3s. 3d. The coal receipts were £5768 11s. 6d., which, with general receipts, totalled £5991 8s. 7d. The mine manager's report showed that everything was going on satisfactorily.—On the motion of the Chairman, the reports and balance sheet were adopted.—Messrs. G. Winstone and R. Walker were re-elected directors.—Mr. Newland was also elected to the directorate in the place of Mr. J. Robertson, resigned.—Mr. O. B. Wayland was re-elected auditor.

WE regret to announce the death of Captain Harry Trevethan, at Chacewater, on Tuesday, 20th. Captain Trevethan was one of the oldest mine adventurers in Cornwall, and for some years held the largest number of shares in the Killifreth Mine.

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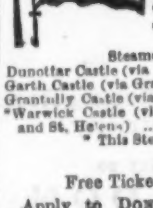

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PROVINCIAL SHARE MARKETS.

THE CORNISH MINE SHARE MARKET.

MR. SAMUEL JOHN DAVEY, Dealer in Cornish Mine Shares, Redruth, Cornwall, reports under date of March 29 (4 o'clock), as follows:—We have had more spirit and better prices in our market this week, but there is not much doing to-day. Following are quotations:—Blue Hills, 1s. to 3s.; Carn Brea, 12 to 12½; Cook's Kitchen, 1 to 1½; Dolcoath, 75½ to 76½; East Pool, 11 to 11½; Killifreth, £3 15s. to £3 17s.; South Condurrow, ⅜ to ½; South Crofty, 2¾ to 3; South Wheal Frances, 2 to 2½; Tincroft, 12½ to 13; West Frances, 1½ to 2⅛; West Kitty, 7¼ to 7⅝; Wheal Agar, 2⅜ to 2¾; Wheal Basset, 3 to 3½; Wheal Grenville, 14½ to 15; Wheal Kitty (St. Agnes), 9s. to 11s.; Polberro, ½ to ¾.

Mr. MICHAEL WILLIAMS BAWDEN, Mining and Assaying Offices, Liskeard, Cornwall, writes (March 29) as follows:—The mining market has been moderately active during the holdiday week, with an enquiry for most of the low price progressive shares at an advance. The sale of tin ores yesterday was very satisfactory, showing a rise of 27s. 6d. per ton in excess of the last. To-day shares are easier on the receding of the tin standard through market operations. The following are prices:—Blue Hills, 1s. to 1s. 3d.; Carn Brea, 12 to 12½; Cook's Kitchen, 1 to 1½; Dolcoath, 75½ to 76; Devon Consols, 1 to 1½; East Pool, 10⅞ to 11; Killifreth, 3⅜ to 3¾; Levant, 5½ to 5¾; Phœnix United Mines, ¼ to ⅜; Polberro, ⅜ to ⅝; South Crofty, 2½ to 2¾; South Frances, 1¾ to 2; Tincroft, 12½ to 12¾; West Frances, 1⅝ to 2; West Kitty, 7¼ to 7½; Wheal Agar, 2¼ to 2½; Wheal Basset, 3½ to 3¾; Wheal Friendly, 2s. 6d. to 4s.; Wheal Grenville, 14¼ to 14½; Wheal Kitty, 8s. 6d. to 10s.

Messrs. ABBOTT AND WICKETT, Stock and Share Brokers, and Mining Share Dealers, Redruth, write under date of Thursday, March 29:—The Cornish share market has shown more animation since the Easter holidays and advances have taken place in most instances, though the tone is easier at the close. Dolcoaths, Killifreths, South Croftys, South Frances, and West Frances attracting most attention, the three latter showing good rises. West Kitty and Tincrofts also firm. With a further move in tin a continuance of the upward tendency may be expected. Closing prices (four o'clock):—Carn Brea, 12 to 12½; Cook's Kitchen, 1 to 1½; Dolcoath, 75½ to 76½; East Pool, 10⅞ to 11½; Killifreth, 3⅜ to 3¾; Phœnix, ¼ to ⅜; Polberro, ⅜ to ½; South Condurrow, ½ to 1; South Crofty, 2¾ to 3½; South Frances, 1½ to 2⅛; Tincroft, 12½ to 13; West Frances, 1⅝ to 2; West Kitty, 7⅛ to 7⅜; Wheal Agar, 2 to 2½; Wheal Basset, 3 to 3½; Wheal Friendly, 2s. to 4s.; Wheal Grenville, 14¼ to 14½; Wheal Kitty, ⅜ to ½. Tin, 68½.

MANCHESTER.

Messrs. JOSEPH R. and W. P. BAINES, Stock and Share Brokers, Queen's Chambers, 7, Market-street, write, March 29, 1894 (noon):—Friday, Saturday, and Monday being closed days there is but little time to report upon since we last wrote. We may, therefore, content ourselves to-day with generalities for the most part. The magnificent weather during the holidays brought in a very good tone for home rails, which tone, however, was hardly maintained on publication of traffic returns. These returns, whilst in some cases showing increases in large figures, have not been viewed as particularly encouraging. The increase of working expenses in one or two instances has led to a discounting of traffic increases, and taken all round the influences have induced some profit-taking in this market, with the result that best prices of the week are in all cases maintained. This, nevertheless, leaves a general array of higher prices for the week, the only exception being in Brighton A, in which case the effect of increased working expenses has been most noticeable. The advances on balance are here and there 2, or a little over, whilst many are between 1 and 2, and the rest in fractions of 1 per cent. Other departments of rails show a long list of improved quotations, Americans providing the only exception—viz., a fall of $1 in Readings. Americans have risen fairly steadily with manifest strength in the past day or two. Norfolk Preference $22¾, Union Pacific $2½, and Milwaukees $2, are the most prominent in the advances, but they are closely followed by a few others, and the further changes range down to fractional advances with the exception of Readings as named above. Canadians are all more or less better; Pacifics are $1, and Trunk issues are fractionally higher. Mexican railway issues are higher, as follows—viz.: Ordinary 1¼, First Preference 1⅜, and Second Preference 1 higher. Consols are ¼ to ½ better on the week. Colonials only mark a few changes to the extent of ½ each, but they are all on the upward side. Home Corporation Stocks are unchanged in current quotations, and transactions therein are few. Foreigners where altered are all better. Uruguay 3½ per cent. is to the front with rise of 3, Argentine 6 per cent. 2 to 2¼ ditto 5 per cent. 1½, Spanish 4 per cent. ¾, Egypt Unified ½, Italian Rentes ½, and Mexican 6 per cent. ½. Miscellaneous sections, little doing in any one class, but with few exceptions better prices are the rule all round. There is a little irregularity in Coal and Iron shares and purely miscellaneous, but in each case the changes are small and contradictory. The alterations, though so general on the upward side, are of such small amount that they do not call for special record in any case.

LATER (4 P.M.).—Home Rails have been idle, with a tendency towards lower prices. Americans opened steady, and have continued so all day, closing firm. Grand Trunk issues in demand at higher figures.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, Stockbroker and Ironbroker (March 29), writes:—Since last report (March 21) business has been restricted by the intervening Easter holidays, followed by the fortnightly account, but prices are rising on more cheerful trade prospects. Rates of continuation to new account, April 12, have been very moderate.

In shares of coal, iron, and steel companies prices are generally better. Steel Company of Scotland shares have improved from 71s. 6d. to 76s., on the orders for the new war vessels. Wilson's and Clyde coal interim dividend is announced at 7s. 6d. for Ordinary shares payable April 10, being same as at corresponding period last year. Bolckow Vaughan, 6⅝; Ebbw Vale, 9; Marbella, 63s.; Niddrie Coal, 53s.; and Oceana Coal, 14s. 6d.

In shares of copper concerns there has not been much business doing. Arizona have been sold from 6s. 6d. to 7s. 6d., and Tinto from 15 3-16 to 15 9-16. Tharsis have declined from 100s. 6d. to 98s. 6d. on the dividend which was announced yesterday. The rate is 12½ per cent., or 5s. per share, which compares with 15 per cent. or 6s. per share in 1893.

In shares of gold and silver mines a fair amount of business has been done. Prices are improving, especially for South Africans. Montana are at 6s. 3d. The Almada Company's report for last year shows a loss of £1878. Some return is now being obtained from tailings, but unless there is an increase in the output or better prices for silver, the concern does not appear likely to do much good. The Sheba Company will pay an interim dividend of 6d. on April 16, Aladdin's Lamp 1s. interim to-day, and the Nigel Company 10 per cent. at the end of May. Zwartland Transvaal and United African Land both offered, African Gold Recovery are at 27s., American Belle, 1s. 3d.; British South Africa Chartered, 32s.; Broken Hill Proprietary, 45s. 9d.; Bechuanaland, 22s. 6d.; Cassel, 18s. 6d.; Consolidated Gold Fields of South Africa, 52s.; Cinta, 1s. 6d.; Durham Roodepoort, 6; Heriot New, 72s. 6d.; Kimberley Roodepoort, 9s.; Langlaate B, 7s.; Lisbon Berlyn, 3s. Mallina, 10s. to 15s.; New Central Borneo, 2s. 6d. to 3s. 6d.; Otto's Kopje, 1s. 9d.; Orito, 2s. 6d.; St. John del Rey, 20s.; Totumo, 10s.; Wemmer, 97s. 6d.; and Wentworth Ordinary, 6s. 3d.

In shares of miscellaneous companies there has not been much business doing, but prices are steady. In oil companies Broxburn are at 8½, Pumpherston, 6⅜; and Young's, 26s. 6d. Lawes' Chemical are at 6½; Nobel's Explosives, 13⅛; Roburite Explosives, 31s. 3d.; and White Lead, 5s. 6d. to 6s. 6d.

EDINBURGH.

Messrs. THOMAS MILLER and SONS, Stock and Share Brokers, 69, Hanover-street, Edinburgh, report as follows under date of March 29: A large amount of business has been done during the last day or two, principally in the more speculative stock. Prices of railway stocks are generally higher. Caledonian Railway Deferred stock stand as high *ex* as it did last week *cum* dividend. North British and Glasgow and South Western are among those that have improved. Canadians are better, and Americans have been very active at advanced prices. British Linen has improved 20s., National 20s., Bank of Scotland 10s., Clydesdale 2s. 6d. Royal has declined 20s. Insurance shares have been quiet. Commercial Union have risen from 30¾ to 30 15-16. British South Africa shares have improved from 29s. 6d. to 32s., Mortgage of South Australia from 8s. to 10s. 6d. and the Preference shares from 92s. 6d. to 100s., Realisation and Debenture Corporation from 18s. 6d. to 20s. Cowdenheath Coal have declined from 14 7-16 to 14 1-16, Broxburn Oil from 8¾ to 8⅝, Pumpherston from 7 to 6⅜. Barry Ostlere shares 2s. 6d. up at 7⅜. Coats are at 16 3 16 *ex* against 16⅛ *cum* dividend. Distillers 2s. 6d. lower at 15¼. McEwan Preference 5s. higher at 13. The shares of the Edinburgh United Brewery Company have come into demand, the Ordinary have risen to 58s. and the Preference to 7⅛.

MINERS AND CONCILIATION.—A conference of Northumberland coalowners and representatives of miners was held, on Saturday, in Newcastle, to arrange for the formation of a joint committee to regulate wages at every quarter of the year, with full powers of amicably settling disputes, thus averting strikes in the future. After some conversation, it was agreed to adjourn the meeting for two weeks. In order to test the feeling of the men on the subject, the Executive Council of the Northumberland Miners' Association issued a circular to the county, and a vote has been taken, with the result that the men by a large majority have expressed themselves as being in favour of the following proposal:—"That a Conciliation Board, consisting of an equal number of coalowners and miners, be formed to deal with all county wages questions, the board to meet every three months for the purpose of determining what the wages shall be for the succeeding three months; that the members shall have power to deal with all disputes, and that in order to prevent any hitch arising when the representatives of the coalowners and the workmen are unable to come to an agreement, an independent Chairman be appointed for the purpose of giving his decision."—The Graigola Merthyr Company offer to 400 of their men, who are locked out at Swansea, 5s. 4d. per day of 100 tons. The company are prepared to make advances when selling prices revive upon the principle of a sliding scale operating as follows:—The 5s. 4d. per day of 100 tons to be paid at the present rate of the Coalowners' Association, an advance of 10 per cent. or 6½d. a day when colliers' wages are 36 per cent. above the standard, and another advance of 10 per cent. or 1s. 2d. per day when colliers' wages are 40 per cent. above the standard.—At the monthly meeting of the Neath, Swansea, and Llanelly Miners' Association, at Swansea, representing several thousand men, a resolution was passed regarding the injustice of the South Wales sliding scale, and supporting the association's representatives in refusing to sign the same.

THE FORTY-EIGHT HOURS WEEK.—In an elaborate report, Mr. W. Mather, M.P., details the results of the year's experiment of the "Forty-eight Hours Week" at the Salford Iron Works of Mather and Platt, Limited. In the works, the full complement of men is 1200, though the number employed varies very greatly. The trades include moulders, pattern-makers, smiths, tin-plate workers, engine fitters, boiler-makers, &c. The character of the work is general engineering—such as boilers, pumping machinery, engines, textile machinery, electrical machinery, &c. The year's trial has been made in a period of great depression. No overtime was worked, except for breakdowns and repairs. The first year's trial was formally arranged with the chief officials of the Amalgamated Society of Engineers. The 48-hour system was begun by Mather and Platt on February 20, 1893, but for convenience the twelve months from the 1st of March are taken. There has been an economy in lighting, in wear and tear, in fuel, &c.; but some increase in fixed charges through the staff on salaries being five hours less employed per week. In the wages cost, there is an increase of 0·4 per cent., but a saving of exactly 0·4 per cent. in expenses. There is less lost time, and piece work changes were less than anticipated. The result of the year's trial is so satisfactory that the company has decided to make the 48-hours week permanent. It is believed that the "two morning hours before breakfast are not worth the pains and trouble they cost;" the total abolition of overtime is essential to the new week's system; and the "most economical production is obtained by employing men only so long as they are at their best." Mr. Mather expresses the opinion that a rigid law by means of legislation cannot provide a remedy for conflicts such as arise in the industrial world; but "arrangements mutually planned and carried out by the trades unions and the employers" would do much to make the manufacturing industries secure and prosperous.

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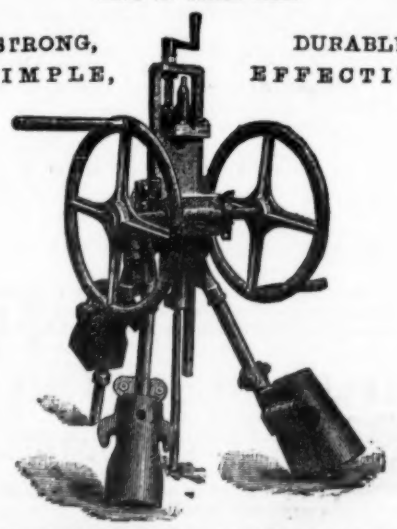

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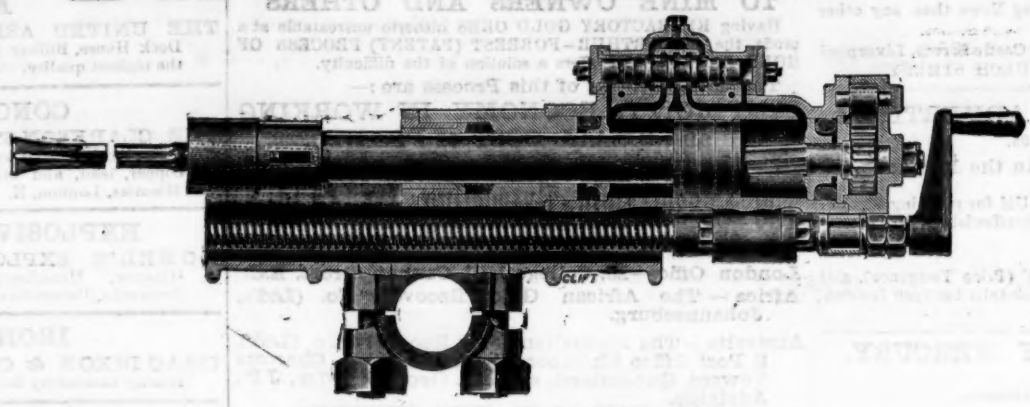

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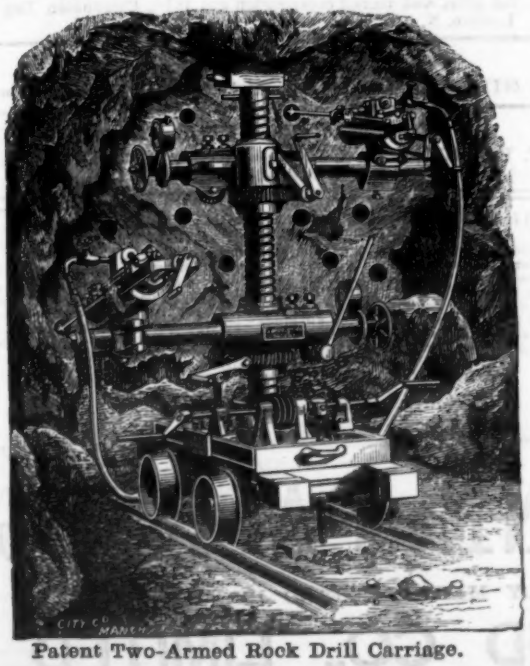

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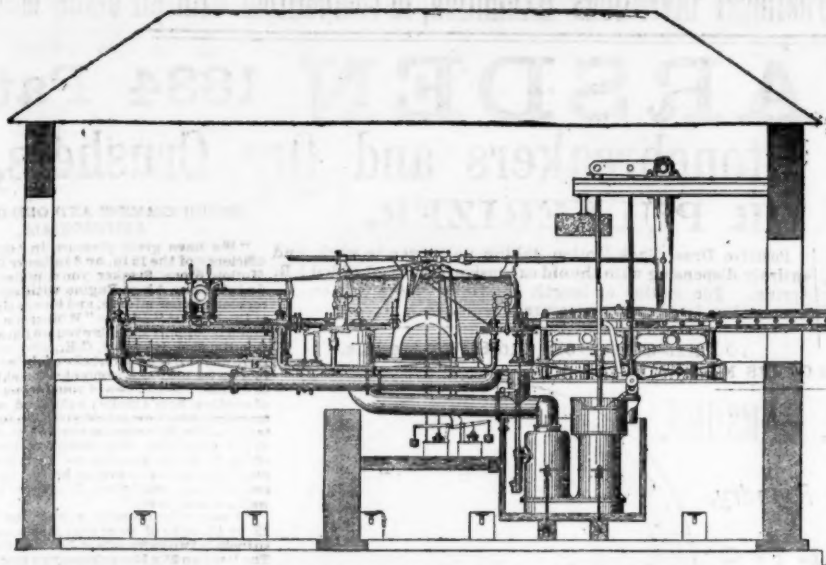

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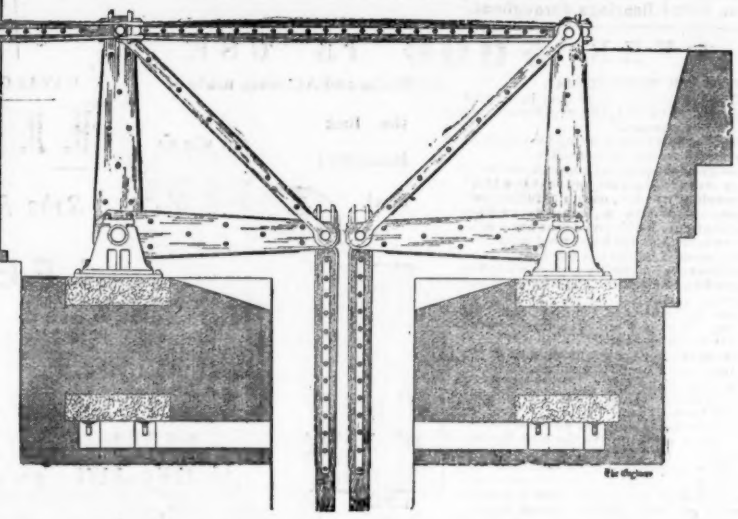

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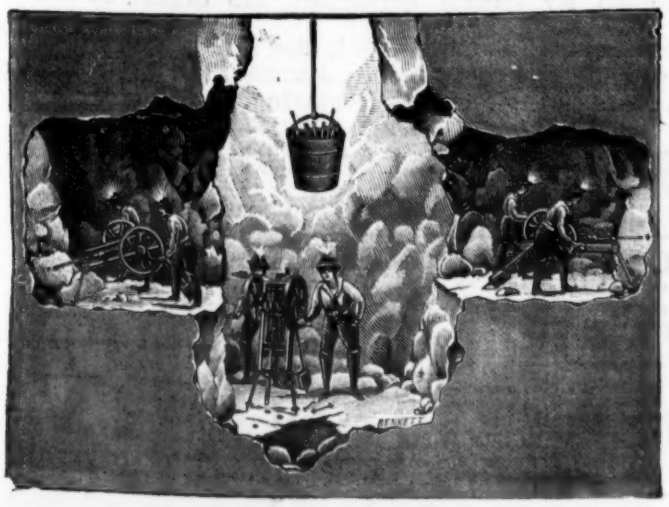

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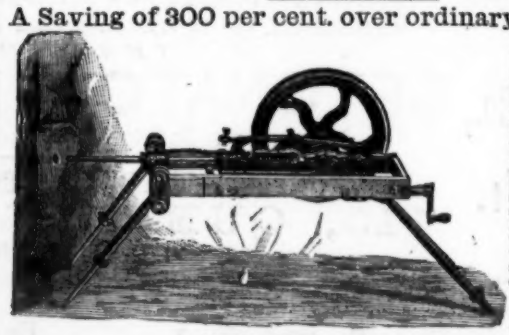

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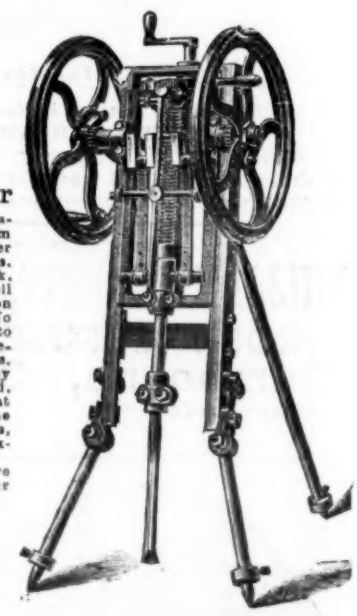

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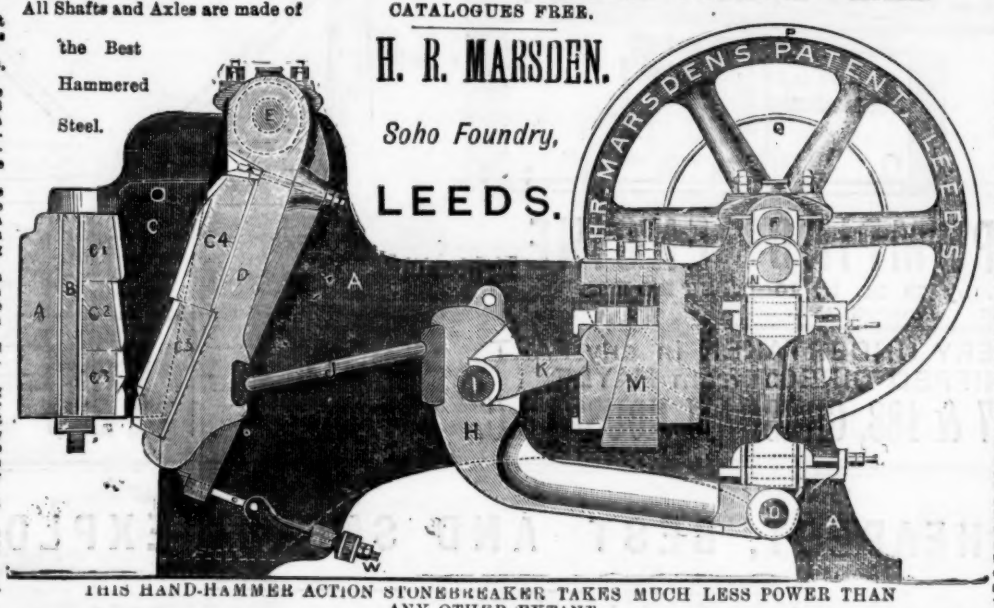

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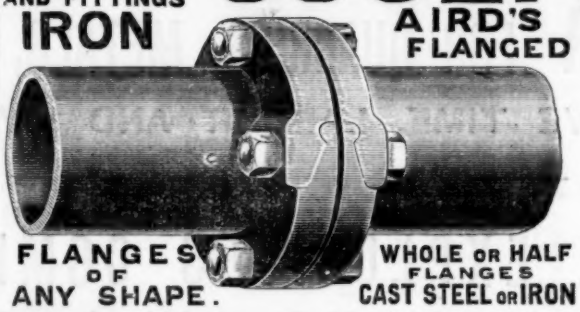

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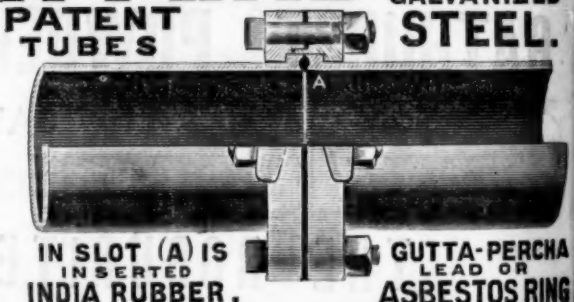

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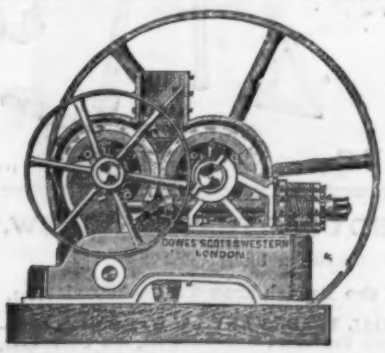

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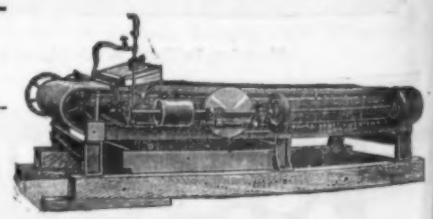

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